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DESIGNING GRADUAL TRANSITION TO MARKET ECONOMIES

by

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1. INTRODUCTION

The dilemma of transition from socialist to market economies consists of overcoming not only the ideological barriers to the transition but also the real dislocations involved. On the one hand, an abrupt transition is desirable in order to achieve a consistent set of prices, incomes, and resource allocations; on the other, it is feared that such a transition may result in economic chaos in the short run, since the resource allocation, income distribution and price solution of the current system may be very far from those of a market-allocation and market-price system.

A theory of gradual transition from socialism to market economy is proposed which proceeds in two steps: in the first step, all allocations and targets in the socialist economy are converted into their subsidy-and-tax price equivalents in a market economy that reproduces the existing socialist solution. In the second step, the subsidy-and-tax equivalents associated with a target profile of the market economy are calculated and a gradual approach to these target subsidies-and-taxes is devised.

The first step is equivalent to replacing standards with taxes or subsidies. To reproduce both the socialist income distribution and the socialist quantities requires either an immediate redistribution of public assets or instruments such as taxing to an exogenously set standard (Baumol and Oates, 1988). The feasibility of the adjustment process depends upon the government's ability to precommit to a believable trajectory of changes in taxes and subsidies.

This two-step procedure can be applied to any economywide model with incomplete and/or distorted markets and quantitative restrictions to design a viable transitional policy regime. We apply it to a computable general equilibrium model of Yugoslavia which reproduces the current distortions. In the next section we present the theory underlying the reform design. In section three, the current distortions are evaluated in a set of "rent SAMs" arising from import quotas and domestic price and quantity controls. In section four, we discuss the implications of these distortions for the desirability of reform. In section five, the subsidy cum tax price equivalents are calculated and the model is tested with different institutional

reforms in factor market lengths of periods of policy precommitment. The final sections discuss some potential pitfalls in the transition, and why our model understates the real world difficulties of reform.

2. A THEORICAL STATEMENT OF OUR APPROACH TO REFORM

An idealized socialist system consists of M classes of agents, called institutions. Agents within a class receive the same government subsidies, own the same quota rights, and face the same prices. Thus all opportunities for trade within an institution are exhausted by the socialist price system.

Institutions interact by buying and selling goods and factors of production at the socialist prices p_c. These prices are not necessarily market clearing prices, so the inter-institution transfers are limited by quotas, q. The distortions of prices and quantities from their market values cause rents to accrue to institutions. Socialism also has rules that determine the distribution of these rents, as well as of ordinary profits. Thus any change in prices leads to a change in incomes and therefore in demand. Because the socialist rules may lead to negative profits for some operating enterprises, socialist governments make lump sum payments as well as levy more ordinary taxes.

The allocation that results from these socialist rules is taken to be feasible in the narrow microeconomic sense. In a broader sense, government budget and trade deficits are taken as given and supportable.

In this section we shall show that the socialist allocation can be reproduced with one set of commodity taxes for each commodity/institution and a lump sum subsidy for each institution. The result is a generalization to a whole economy of the equivalence of tariffs and quotas in the trade literature (Bhagwati, 1965) or the equivalence of taxes and standards (Baumol and Oates, 1988) in the environmental literature. The result clearly shares the limitations of equivalence theorems of the environmental and trade literatures.

In both of those literatures the non-equivalence of taxes and quotas plays an important role. Although a tariff and a quota can induce the same market outcome, e.g. level of imports, a quota confers a rent upon the owner of the quota. For instance, U.S. voluntary import quotas for automobiles, textiles and steel were

estimated to increase foreign profits by $14 billion annually. An equivalent tariff would not have this effect (Tarr, 1989, p. 2). Bhagwati and Srinivasan (1976) and Krueger (1974) carry the argument a step further and argue that the potential existence of rents (or tariff revenues) induces agents to work to obtain these rents for themselves (rent seeking) wasting resources in the process (directly unproductive activities). In the environmental literature, firms prefer equally restrictive standards (quotas) to taxes because the taxes not only induce a cutback in pollution but also transfer money from the firm to the government.

Abstracting from rent seeking, a quota is equivalent to a tax plus a lump sum transfer. Lump sum taxes are difficult to envision in a capitalist system. In the environmental literature, lump sum taxes can be avoided by taxing to a standard. That is, the regulated firm is forgiven its tax liability on the first q units of pollution and taxed only on the remainder. More generally, in public finance, infeasibility of lump sum taxation leads to only second best allocations being feasible (Diamond and Mirrlees, 1971). In the absence of lump sum taxes, there may not be a tax that exactly duplicates all the effects of a quota. Under socialism, however, lump sum distributions are ubiquitous.

In an uncertainty setting, taxes and quotas also have divergent effects. Consider a tariff, constant across years, set to give the same imports as a quota in a base year. In any year but the base, differences in demand and supply induced by a host of variables (like OPEC) will cause the realized effect of the tariff to be different from the quota level (Krueger, 1974). This is formally the same as an uncertainty argument in a two-period world: decisions are made in period one and the consequences, seen as random from period one, are accepted in period two. Weitzman's prices versus quantities argument is carried out in this setting and he finds (Weitzman, 1974) that the two instruments are not equivalent. If getting the quantity right is very important (like getting medicine to a disaster area) one should use quotas. If getting costs right (in the sense that price equals marginal cost) is important, then one should use prices (taxes). Of equal importance in a socialist setting is the non-equivalence of taxes and quotas when there is monopoly power (Bhagwati, 1978). The substitution of subsidies and taxes for mixed quotas and price controls gives exactly equivalent outcomes only in a certain, static, competitive,

non-rent-seeking environment.

The Price-Quota Equivalence Theorem

The equilibrium allocation of any mixed system of price and quantity controls can be replicated as the equilibrium of a price system with institution-specific commodity-taxes and lump-sum subsidies. We prove this proposition by considering each of the institutions in turn and devising a tax and subsidy system that results in the institution making the same choices that it made under socialism. The general method of the demonstration is to write a Lagrangian expression for the institution's choice problem and show that quota constraints on that choice are the same as unrestricted choices made with respect to a modified price system. Once it can be shown that no institution changes its choices, it is obvious that the sum of the institutional choices are the same as well.

A different, more rigorous, and less illuminating demonstration would proceed by repeated use of the second theorem of welfare economics. For instance, consider a consuming institution in an exchange economy with an initial endowment and therefore an allocation of x_{0i}. The allocation is trivially Pareto optimal, so by the second theorem of welfare economics there exist an income distribution and a price system that support that allocation. The same sort of reasoning can be used for other institutions, so there exists a price system and subsidy that decentralizes each institution.

The notation we will use to discuss the change from a mixed, quantity-price system to a pure price system is as follows. There are n goods, which include final goods, factors of production, goods traded in the clearing-currency area, and goods traded in the convertible-currency area. Each institution is represented by a unique integer i. The net quantity demanded in the initial state (socialism) by the i-th consuming institution is the n-vector $x_{0i} = (x_{01i},...x_{0ni})$. Netputs of producing sectors are (n-vectors) y^i. Quotas are (n-vectors) q^i, prices are p^i, etc. Where there is no danger of confusion, we will omit the institution specific superscripts; similarly prices and shadow prices are taken as row vectors while quantities are taken as column vectors, so they are always conformable for multiplication. The socialist case we consider is that there is a price vector p_c (not necessarily the market price, p_m)

and a quota vector q for each institution. We find the tax vector t, and subsidy vector s that give the same x (or y) as the socialist system. We shall refer to this system of t and s as the market-equivalent-of-socialist-subsidies or the MESS tax system. In following section, we estimate the MESS taxes empirically by taking distortions one at a time.

Consumers: Without loss of generality, consider the first type of consumer. The consumer chooses goods, x, to maximize utility, U(x), subject to a budget constraint and the quantity rationing constraint. The formal problem is

$$V = \max U(x) \quad \text{s.t. } m = p_c x \text{ and } x \leq q.$$

Some elements of q may be very large, which is to say there is no binding constraint on how much of that good can be bought. Under the usual assumptions about utility, one can use the Kuhn Tucker theorem to find the solution to this constrained problem. The solution can be found by finding the saddle point (x^*,λ^*,γ^*) of the Lagrangian,

$$L_0(x,\lambda,\gamma) = U(x) + \gamma(m-p_c x) + \lambda(q-x)$$

To convert this to a problem with just a budget constraint, notice that (x^*,γ^*) is also a saddle point of

$$L_1(x,\gamma) = U(x) + \gamma[m + (\lambda^*/\gamma^*)q - (p_c+\lambda^*/\gamma^*)x]$$

(Proof: When $x = x^*$, $\lambda^*/\gamma^*(q-x^*) = 0$, so minimizing L_1 or L_0 on γ give the same answer; when $\gamma = \gamma^*$, maximizing L_1 and L_0 obviously give the same answer for x). Since (x^*,γ^*) is a saddle point, x^* also solves the problem

$$W = \max U(x) \quad \text{s.t. } m + (\lambda^*/\gamma^*)q = (p_c+\lambda^*/\gamma^*)x$$

Thus problem "V" and problem "W" have the same solutions for given p,m, and q. Moreover (by complementary slackness) the value of the lump sum subsidy,s, exactly equals the value of the commodity taxes, $s = (\lambda^*/\gamma^*)q = (\lambda^*/\gamma^*)x$

Since λ^* depends on p_c, q, and m, the demand curves from "W" and "V" are not the same. Put differently, there is a tax structure, (λ^*/γ^*), and subsidy structure, $(\lambda^*/\gamma^*)q$ that will reproduce the quota-based demand, x_0, but it will not reproduce the quota-based demand curve.

Firms: Each class of firms that receives the same government subsidies and faces

the same prices can, for our purposes be aggregated into a single firm. The firm's problem is to maximize profits, p at prices p_c, using netputs y. Negative values of elements of y indicate inputs, positive values outputs. Netputs are differentiated by being untraded, traded in the clearing zone, or traded in the hard-currency zone. There are potentially separate quotas for each. The firm's problem is max p_c y s.t. $y \in T$ and $y \geq q$, where T is the production technology, assumed neoclassical, and q is the production-quota. We assume that there exists a feasible y and that in the socialist allocation the firm was operating efficiently. As with the consumers, let λ^* be the shadow prices of the quotas. The firm's decisions can be decentralized by having it face prices $p_c + \lambda^*$ and receive lump sum transfer $s = \lambda^* q$. Since the firm hires the same factors with the taxes as it did with the quotas, its payments to factors are identical. Since profits (sum of rents and quasi rents) are unchanged, its payments to other institutions are unchanged. And, by construction, it produces the same output.

Trade: Trade is just the opportunity to transform one product into another at a fixed ratio given by international prices. We take all quotas as accruing to firms other than the trade firm (no voluntary import quotas) so quotas in international trade are formally quotas on the internationally-traded inputs of ordinary firms and consuming institutions. When p_c is not the same as the world price (they differ by a tariff), the capitalist analogue of p is exactly p_c plus the same tariff.

Aggregate: By construction, each class of firms and each class of consumer makes the same material choices under the price system that they made in the price and quota system. Thus the price-only allocation is feasible. It is supported by prices $p_c + \lambda^{j*}/\gamma^{j*}$ for consuming institutions and $p_c + \lambda^{i*}$ for producing institutions. These prices are indexed from the old socialist prices p_c. Equivalently, one could consider the new prices to be the producer prices for any one institution, say the first, $p_1 = p + \lambda^{1*}$, and the economy to have institution-specific taxes for all other institutions. The natural choice for an institution to use as numeraire is the trade institution; nontradables have prices derived from the tradeable prices in the manner of Little and Mirrlees. For example consumer j would face taxes $t^j = \lambda^{1*} - \lambda^{j*}/\gamma^{j*}$ and producer i would face taxes $t^i = \lambda^{1*} - \lambda^{i*}$. Clearly, (p_1,t,s) are an equilibrium price, tax, and subsidy (vector) triplet.

Also by construction the lump sum subsidies are exactly exhausted by the firm (consumer) specific commodity taxes. Thus this system has the same government budget as the previous system.

In the event of a government miscalculation or a change in circumstances such as international prices, the new equilibrium system would continue to be feasible: prices simply adjust to clear markets. The system would not however, maintain quantities at the old levels.

In the case where the law of one price held under socialism, the taxes are commodity taxes or tariffs. That is, the taxes/subsidies drive a wedge between consumption (even intermediate consumption) and production prices, but all buyers face the same price. Given that the lump sum distributions are done once and for all, when the system is converted to capitalism, the lump-sum taxes are then not available to affect income distribution. The resulting tax structure is of the type discussed in Diamond and Mirrlees (1971). If the socialist economy had used its price and quantity constraints to maximize social welfare, then the tax structure after conversion would consist of the optimal commodity taxes. Since optimal commodity taxes are characterized by productive efficiency, and the socialist system taxed intermediates, we know that the implied commodity taxes are not optimal. How far they are from optimal is an empirical question.

3. QUANTIFYING THE MESS SYSTEM OF TAXES AND SUBSIDIES[1]

The reformed planning systems, which have come to dominate most East European economies since the 1960s, use both quantity and price instruments to manage semi-or-fully decentralized economies. In principle, quantity and price controls can lead to the following outcomes: suppliers are on their supply curves while consumers are rationed; or suppliers are off their supply curve while consumers buy as large a quantity as they want at the rationed price. In each of these cases, prices can be either above or below and quantities can be either larger or smaller than their free-market equilibrium.

Positive consumer scarcity rents (CSR) arise whenever the demand price

[1]This section is abstracted from Adelman, Berck, and Vujovic 1990. The interested reader is referred to that paper for greater detail.

is greater than the effective market price. CSR cannot be negative, since consumers cannot be driven away from their demand curves. In the notation of the theory of the preceding section, the CSR are equal to $(\lambda^*/\gamma^*)q$. Producer rents (PR) exist whenever the effective market price differs from the supply price. This can happen under pure price controls, pure quantity rationing and combinations of the two. Producer rents can be either positive (PPR) or negative (NPR). In the notation of the previous section, the producer rents equal λ^*q. In reality, numerous factors in socialist economies cause an underestimation of production costs and supply prices. The nominal supply curve is then below the true-cost supply curve and consumer subsidies are larger.

The most frequent case observed in socialist economies combines all the distortions described above: (a) controlled prices at levels below nominal supply price; (b) quantity rationing at levels above normal supply responses for given controlled prices, causing nominal operational losses in public enterprises; (c) additional subsidies granted through unrealistic determination of production costs, causing real operational losses; and (d) rent-seeking behavior (including an underground economy), aimed at capturing scarcity rents.

The accounting flows measured in non-market economies capture only the rectangles circumscribed by the observed market price and the observed quantity sold. Price or quantity controls give rise to hidden flows represented by the consumer scarcity rents and the producer rents in figures 1-3. These hidden flows must be added to the flows captured by existing statistics in order to obtain a representation of the actual values of transactions taking place in the economy. These "true" transaction values are given by the sum of market flows, consumer scarcity rents, and producer rents.

A partial equilibrium evaluation of these rents will not suffice. We therefore proceed to estimate the distortions that must be replaced by the MESS tax system in two steps: First, we estimate the direct price-equivalents of the quantity and price controls arising from a particular type of distortion in each sector of the economy. Second, we use information contained in a Social Accounting Matrix (SAM) to evaluate the direct and indirect rents received by each activity and to distribute these rents to factors, enterprises, households and government; and between current

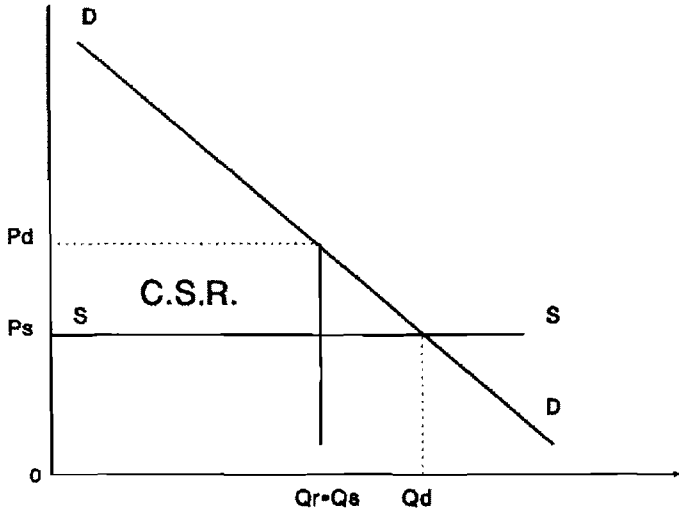

Figure 1: Import Quantity Rationing

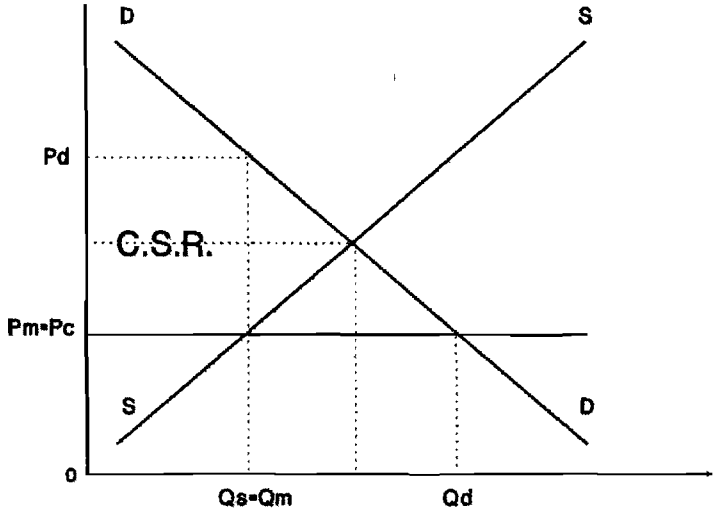

Figure 2: Pure Price Rationing

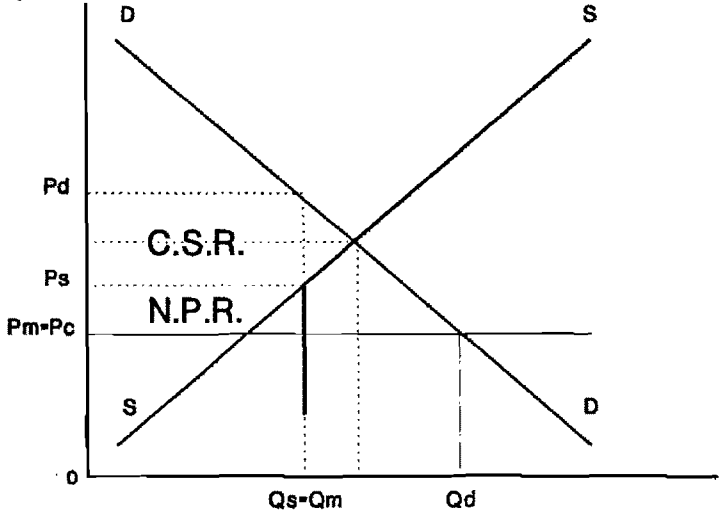

Figure 3:Price and Quantity Rationing

consumption, investment and the public deficit. This yields the incidence of rents as well as the incidence of taxes and subsidies that must be reproduced by the MESS tax system.

The estimation of rents and their allocation among activities and institutions is performed for Yugoslavia as of 1987, using the base SAM of table 1. The major types of distortions in socialist countries originate from import controls (or, in some socialist countries but not in Yugoslavia, export targets); domestic price controls; or from a combination of domestic price and quantity controls. Each distortion gives rise to a set of interconnected flows that can be portrayed in a "rent/MESS SAM" due to that particular distortion. The rent/MESS SAMs indicate the changes in the values of the flows arising from specific distortions. As evident from the theory presented in the previous section, the rent SAMs also indicate the tax/subsidies and lump-sum transfers that must be added to the base-SAM economy to induce the same behavior and economic outcome for all institutions and sectors as under the existing non-market (quantity and/or price control) distortion. The procedures used to derive the rent SAMs are discussed in detail in Adelman, Berck and Vujovic (1990). Here, we present an abbreviated discussion.

Import Quotas

In Yugoslavia, the strong trade liberalization drive of the late 1970s was reversed after disappointing trade deficits materialized in 1979-81. When import restrictions are present, the supply price, which is also the market price reflected in the base SAM, is below the demand price. This gives rise to consumer rents from imports.

Figure 1 shows the case of import quantity rationing. The horizontal supply curve is the world price and the demand curve is that of the importing industry. A tariff of $p_d - p_s$ is the equivalent of the quota; rents are $(p_d-p_s)Q$ which is equal to $Q_{sj}(\lambda^{j*})$.

Our major source of information for import quotas was a detailed analysis of restricted imports produced by the Yugoslav government, using the six-digit Brussels commodity classification. For each commodity, we estimated how binding the quotas were by comparing imports in 1987 with imports in 1979-81, a

Table 1: Base 1987 SAM

	AGRI	ENER	IRON	META	CHEM	TEXT	FOOD	OTIN	CNST	TRAN	OPSE	NPSE	LABHS	LABSK	LABUN	CAP	ENT	RHHL	MHHL	UHHL	GOV-IN	GOV-MX	GOV-SL	INVSAV	ROWCL	ROWCV	Total
AGRI	2899	13	5	8	156	278	3518	320	34	155	183	240	0	0	0	0	0	545	1247	756	0	43	18	837	60	235	11551
ENER	347	3569	716	382	483	168	160	390	166	832	598	315	0	0	0	0	0	85	376	1009	0	38	45	65	65	254	10064
IRON	5	31	2363	1764	64	21	15	94	211	37	95	96	0	0	0	0	0	0	0	0	0	193	31	593	156	608	6378
META	122	222	205	4565	171	95	123	236	437	589	607	844	0	0	0	0	0	108	460	1144	0	411	30	7121	509	1987	19986
CHEM	432	122	108	483	2994	642	265	690	74	126	160	700	0	0	0	0	0	48	196	453	0	166	12	731	209	816	9426
TEXT	40	19	23	252	77	2695	30	139	39	204	154	221	0	0	0	0	0	148	694	1871	0	126	9	1213	233	907	9094
FOOD	747	0	0	1	52	220	2202	5	0	161	971	290	0	0	0	0	0	220	1087	2941	0	56	9	977	80	312	10332
OTIN	63	44	130	360	202	77	129	1050	1309	173	251	258	0	0	0	0	0	82	261	832	0	137	31	817	145	566	6917
CNST	36	44	12	141	24	12	14	52	1691	129	108	351	0	0	0	0	0	3	13	34	0	0	0	5043	114	444	8264
TRAN	323	24	321	822	403	187	243	460	951	1210	720	369	0	0	0	0	0	315	1283	2962	0	0	0	1079	419	1634	13723
OPSE	274	303	578	638	379	222	170	260	311	957	597	545	0	0	0	0	0	193	976	3101	0	6	1	413	350	1363	11637
NPSE	41	39	17	169	82	38	65	42	66	275	222	283	0	0	0	0	0	76	337	904	11608	0	0	0	0	0	14263
LABHS	420	71	39	248	76	58	70	62	126	383	163	2478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4193
LABSK	356	179	97	649	101	161	120	157	459	998	716	1622	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5614
LABUN	3113	481	279	1957	524	1521	707	1033	1477	3264	2565	3245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20166
CAP	1333	1885	666	2390	1063	1280	1299	879	558	2959	1495	1754	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17560
ENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16904	0	0	0	0	0	0	0	0	0	0	16904
RHHL	0	0	0	0	0	0	0	0	0	0	0	0	140	317	1456	256	0	0	0	0	107	0	0	0	2	369	2646
MHHL	0	0	0	0	0	0	0	0	0	0	0	0	874	1688	4781	290	0	0	0	0	1231	0	0	0	1	245	9109
UHHL	0	0	0	0	0	0	0	0	0	0	0	0	2066	2269	9526	111	0	0	0	0	5302	0	0	0	2	431	19707
GOV-IN	208	280	65	588	159	316	192	240	355	1032	561	614	1112	1340	4403	0	6311	37	188	504	0	0	4186	0	-48	-1129	21514
GOV-MX	57	70	85	452	229	85	30	54	0	0	5	0	0	0	0	0	0	0	0	0	110	0	0	0	0	0	1177
GOV-SL	124	1154	0	1022	379	532	711	337	0	0	76	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4373
INVSAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10593	785	1993	3194	3156	0	0	0	93	-924	18889
ROWCL	89	851	290	466	387	109	19	91	0	33	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2390
ROWCV	524	664	381	2627	1422	380	251	328	0	206	1334	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8117
Total	11551	10064	6378	19986	9426	9094	10332	6917	8264	13723	11637	14263	4193	5614	20166	17560	16904	2646	9109	19707	21514	1177	4373	18889	2390	8117	

For sectoral acronyms see footnote to table 2. LABHS=High-skilled labor; LABSK=Skilled labor; LABUN=Unskilled labor; CAP=Capital; ENT=Enterprises; RHHL=Rural households; MHHL=Mixed households; UHHL=Urban households; GOV-IN=Government income; GOV-MX=Import and export taxes/subsidies; GOV-SL=Sale taxes; INVSAV=Investment/savings; ROWCL=Rest opf the world, clearing; ROWCV=Rest of the world, convertible. IDIST= Investment in the change of stocks (inventories). Sector acronyms preceded with "I" indicate investment;

period of liberal import restriction with a roughly similar level of gross output. Once sectoral import quantity restrictions were quantified, the import-price equivalent of these restrictions was estimated using the elasticity of import demand derived from regression analysis and information on the point of intersection of the demand curve with the supply quantity. Our estimates indicate that the rent equivalent of quotas ranged from 10% to 66% of the value of sectoral imports. Rents for convertible-currency-area imports averaged 25.9% and from clearing-area imports 23.8%.

The rent flows arising from import quotas which must be replaced by the MESS tax system are presented in the SAM of table 2. This SAM was obtained by using the price-equivalents of the import-quantity controls computed for each sector with imports to calculate the changes in value of the flows due to import-rationing. We start the computation of adjusted flows by focussing on the import components of the activity-rows of the base SAM. The changes in the activity-rows of the "import-rent SAM" of table 2 reflect the difference between the demand price and the supply price of imports applied to the base quantity of imports. This total sectoral rent is then allocated to intermediate and final demand deliveries in proportion to import shares in total supply on the domestic market. Since exports are entirely domestic goods they are not repriced in the activity rows intersecting the "Rest-of-the-World" columns of the SAM.

The rents in the activity rows cascade down through the SAM. Since they imply changes in the "true" intermediate and investment costs they affect value added and its components. Wandering down the rows of the SAM, wages in Yugoslavia are set with respect to an average consumption bundle and adjusted to keep pace with the value of that bundle. To reflect this fact, we added to the wages of each labor skill the increased value of the re-priced import component of their consumption bundle.

We assumed that profits absorb the net effects of the re-pricing of intermediates, investment and wages. Investment in Yugoslavia, once approved by state or regional governments, carries with it rights to obtain priority access to rationed imported investment goods. We therefore allocated the increased value of re-priced imported investment goods by sector of destination and imported inventories to each sector's capital row of this SAM. Note that the sum of all entries in the

Table 2: SAM of Import Quota Rent/Tax-Subsidy Flows

	AGRI	ENER	IRON	META	CHEM	TEXT	FOOD	OTIN	CNST	TRAN	OPSE	NPSE	LABHS	LABSK	LABUN	CAP	ENT	RHHL	MHHL	UHHL	GOV-IN	GOV-MX	GOV-SL	INV-SA	ROWCL	ROWCV	Total
AGRI	41	0	0	0	2	4	50	5	0	2	3	3	0	0	0	0	0	0	3	8	0	0	0	12	0	0	133
ENER	17	180	36	19	24	8	8	20	8	42	30	16	0	0	0	0	0	4	19	51	0	0	0	3	0	0	486
IRON	0	1	40	30	1	0	0	2	4	1	2	2	0	0	0	0	0	0	0	0	0	0	0	10	0	0	92
META	6	11	10	234	9	5	6	12	22	30	31	43	0	0	0	0	0	6	24	59	0	0	0	365	0	0	875
CHEM	24	7	6	27	165	35	15	38	4	7	9	38	0	0	0	0	0	3	11	25	0	0	0	40	0	0	452
TEXT	2	1	1	10	3	106	1	5	2	8	6	9	0	0	0	0	0	6	27	74	0	0	0	48	0	0	307
FOOD	10	0	0	0	1	3	29	0	0	2	13	4	0	0	0	0	0	3	14	39	0	0	0	13	0	0	130
OTIN	1	1	2	6	3	1	2	17	21	3	4	4	0	0	0	0	0	1	4	13	0	0	0	13	0	0	96
CNST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRAN	2	0	2	4	2	1	1	2	5	6	4	2	0	0	0	0	0	2	7	15	0	0	0	6	0	0	60
OPSE	4	4	8	9	5	3	2	4	4	14	9	8	0	0	0	0	0	3	14	44	0	0	0	6	0	0	142
NPSE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LABHS	7	1	1	4	1	1	1	1	2	6	3	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67
LABSK	6	3	2	10	2	3	2	2	7	16	11	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89
LABUN	49	8	4	31	8	24	11	16	23	52	41	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	320
CAP	-35	270	-20	490	226	113	1	-28	-103	-129	-22	-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	516
ENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RHHL	0	0	0	0	0	0	0	0	0	0	0	0	4	5	18	0	0	0	0	0	0	0	0	0	0	0	27
MHHL	0	0	0	0	0	0	0	0	0	0	0	0	17	23	82	0	0	0	0	0	0	0	0	0	0	0	122
UHHL	0	0	0	0	0	0	0	0	0	0	0	0	46	61	220	0	0	0	0	0	0	0	0	0	0	0	327
GOV-IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GOV-MX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GOV-SL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INV-SA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	516	0	0	0	0	0	0	0	0	0	0	516
ROWCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROWCV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	133	486	92	875	452	307	130	96	-0	60	142	0	67	89	320	516	0	27	122	327	0	0	0	516	0	0	

For acronyms see footnote to table 1.

capital-row of the import-rent SAM of table 2 is equal to the change in value of total investment. This implies that, except for investment, the re-pricing of imports, merely leads to transfers among enterprises, and does not lead to any additional rents elsewhere in the system.

Households get net positive rents from imports consisting of their consumption rents. In our SAM, government gets no consumption rents from imports, since it consumes only a non-tradable, non-productive services. There is therefore no change in the value of government consumption and no effect on the government deficit.

The "Rest-of-the-World" row, which contains sectoral imports, does not carry any rents even though it is imports that give rise to rents throughout the rest of the system. Since imports are already valued at world prices in domestic currency in the base SAM, and since we assume that their supply is perfectly elastic and that there are no changes in the exchange rate, the entries for imports in the base SAM already reflect the full payment for imports to the rest of the world.

The rents arising from import controls are in line with semi-industrial countries: they are 1.9% of GDP at factor costs. Unskilled workers capture about one third of the total import rents and two thirds of consumption rents. Nevertheless, imputing import rents increases apparent inequality slightly. Import rents augment rural household incomes by 1%; mixed, urban-rural, household-incomes by 1.3%; and urban household incomes by 1.6%. The existence of the import-control system hides penalties on enterprises in consumer-goods sectors (agriculture, food, other industries, construction, transport, and all services) and iron. It grants hidden favors to priority sectors -- energy, metals, chemicals and textiles. The hidden penalties range from 1.5% of profits in "other productive services" to 18.5% in construction. The hidden favors are more concentrated, ranging from 8.8% in textiles to 21.3% in chemicals.

Domestic Price Controls with Full Quantity Adjustment

Price controls have been declining in most socialist countries. However, some controls continue to exist. Price liberalization for some "basic" intermediates and consumer goods has tended to be continually postponed. And inflation has led to the imposition of new types of price controls through price formation and

indexation rules.

Price controls with full quantity adjustment are illustrated in figure 2. The demand curve DD is the sum of the demands from final and intermediate use. The supply curve, SS, is marginal cost of the producer. The observed price, p_m is the controlled price p_c. The consuming sectors are "rationed" to quantity Q_s because that is all that is produced. They are assumed to divide it among themselves efficiently. The consuming sectors are assumed to not use up any significant resources in acquiring Q_s, so they earn consumer scarcity rents CSR in amount $(p_d - p_c)Q_s$. Consumers' (exact) share of those rents are $Q_{si}(\lambda^{i*}/\gamma^{j*})$ and producers shares are $Q_{sj}(\lambda^{j*})$ where $Q_s = Q_{si} + Q_{sj}$. These are the rents that must be replaced by the MESS tax-cum-subsidy system.

The effect of price controls on individual sectors was estimated either by relying on recent sectoral studies or surveys or on direct product-price comparisons carried out for highly representative samples, comparing Yugoslav prices with "landed-world-prices". Individual product price distortions were aggregated to the sectoral level using production weights. Our estimates of sectoral rents stemming from price controls ranged from 10% to 25% and averaged 11.7% of gross output.

The economy-wide rent flows arising from domestic price controls in Yugoslavia as of 1987 are given in table 3. We start by re-pricing the total value of flows in the activity-rows of the base SAM at their landed-world-market-equivalent price. We then distribute the change in the value of total transactions among sectors and institutions in proportion to the corresponding cell entries in the total flows excluding exports of the base SAM of table 1. Exports (and imports) were not re-priced, since, in the base SAM, they are already valued at world prices in domestic currency. [2] We end up with changes in the values of expenditures on intermediates, households and government consumption, and inventories and investment in each sector.

The changes in the activity rows, in turn, lead to changes in the value added rows. Since wages in Yugoslavia have been indexed, we added the increased cost of the new consumption bundle to the wages of each labor skill. Similarly, we

[2] This assumes that the repricing of domestic goods was done at the existing nominal exchange rate and with unchanged sectoral real trade balances.

Table 3: SAM of Domestic Price Controls Rent/Tax-Subsidy Flows

	AGRI	ENER	IRON	META	CHEM	TEXT	FOOD	OTIN	CNST	TRAN	OPSE	NPSE	LABHS	LABSK	LABUN	CAP	ENT	RHHL	MHHL	UHHL	GOV-IN	GOV-MX	GOV-SL	INVSAV	ROWCL	ROWCV	Total
AGRI	322	1	1	1	17	31	391	36	4	17	20	27	0	0	0	0	0	1	21	59	0	0	0	93	0	0	1042
ENER	49	504	101	54	68	24	23	55	23	118	85	45	0	0	0	0	0	12	53	143	0	0	0	9	0	0	1366
IRON	1	7	511	382	14	5	3	20	46	8	21	21	0	0	0	0	0	0	0	0	0	0	0	128	0	0	1166
META	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHEM	61	17	15	68	424	91	38	98	10	18	23	99	0	0	0	0	0	7	28	64	0	0	0	103	0	0	1163
TEXT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FOOD	67	0	0	0	5	20	198	0	0	15	87	26	0	0	0	0	0	20	98	264	0	0	0	88	0	0	887
OTIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CNST	5	7	2	21	4	2	2	8	254	19	16	53	0	0	0	0	0	0	0	0	0	0	0	757	0	0	1156
TRAN	32	2	31	80	39	18	24	45	93	119	71	36	0	0	0	0	0	31	126	290	0	0	0	106	0	0	1143
OPSE	58	65	123	136	81	47	36	55	66	204	127	116	0	0	0	0	0	41	208	660	0	0	0	88	0	0	2112
NPSE	10	10	4	42	20	9	16	10	17	68	55	70	0	0	0	0	0	19	84	225	2894	0	0	0	0	0	3556
LABHS	34	6	3	20	6	5	6	5	10	31	13	203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	344
LABSK	29	15	8	53	8	13	10	13	38	82	59	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	461
LABUN	256	39	23	161	43	125	58	85	121	268	211	266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1656
CAP	117	693	343	-1019	434	-389	83	-430	474	177	1324	2461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4266
ENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2894	0	0	0	0	0	0	0	0	0	0	2894
RHHL	0	0	0	0	0	0	0	0	0	0	0	0	16	34	81	0	0	0	0	0	0	0	0	0	0	0	131
MHHL	0	0	0	0	0	0	0	0	0	0	0	0	98	182	339	0	0	0	0	0	0	0	0	0	0	0	619
UHHL	0	0	0	0	0	0	0	0	0	0	0	0	231	245	1236	0	0	0	0	0	0	0	0	0	0	0	1711
GOV-IN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2894	0	0	0	0	0	0	0	0	0	2894
GOV-MX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GOV-SL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INVSAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1372	0	0	0	0	0	0	0	0	0	0	1372
ROWCL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROWCV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1042	1366	1166	0	1163	0	887	0	1156	1143	2112	3556	344	461	1656	4266	2894	131	619	1711	2894	0	0	1372	0	0	

Fo acronyms see footnote to table 1.

re-priced the cost of inventories and investment goods by sector of destination, using the investment matrix, and allocated the increased cost to the capital account of each sector. We followed this procedure because once investment in Yugoslavia is approved by state or regional governments, the firm acquires "investment rights" allowing it to retain the necessary funds within enterprises. We assumed that profits are a residual that absorbs the effects on each sector of the re-pricing of all of these flows. They are, therefore, calculated as residuals and entered into the capital-row of the SAM.

We complete the circular flow of rents arising from the re-pricing of domestic flows by first crediting the savings-investment account with an amount equal to the total change in the value of investment goods. Enterprises are then credited with the balance from the profit and loss account in the capital-row of the SAM. The sum of producer rents arising from domestic activities includes changes in the cost of government consumption expenditures (on a nontradable). Changes in the cost of government consumption are not directly compensated by equivalent changes in taxes on value added or commodities. Increased cost of government consumption, however, does not generate a decline in government savings. This is so because enterprises in Yugoslavia and other socialist countries "transfer" their balances, after provision for investment, to government, crediting them to the state if positive and submitting them for financing by the government if negative. We reflect this in the SAM by having the enterprise-account credit the government-income account with the difference between total enterprise profits and losses and the change in investment. This difference, of course, equals the increased cost of government consumption. Thus, this entire process leads to a "rent SAM" that is balanced, and to a balanced government-income account (i.e. no change in the government deficit).

Numerically, the SAM of table 3 indicates that the "soft" price controls in the domestic economy lead to hidden flows to consumers: on the average, household incomes would be 7.8% higher than at the controlled market prices reflected in the base SAM. However, inequality would also be somewhat higher. At world market prices, the ratio of urban to rural incomes would be 3.5% higher and the ratio of high-skilled wages to unskilled wages would be 2% higher than with

existing, controlled, prices. Existing price controls nominally imposed to generate more equality in actuality thus serve to mask some inequality. Under domestic price controls investment appears to be underpriced by about 7.2%. At world prices, GDP at factor costs would be 12.9% higher and GDP at market prices would be 11.2% higher than under controlled domestic price.

Domestic price Controls with Constrained Supply Adjustment

Three types of quantity constraints accompany price controls in most socialist economies: the government sets hard quantity constraints; "self imposed" quantity constraints are negotiated between producers and either the government or some parastatal institutions; controls on investment and frequent price-control changes give rise to constraints on quantity adjustment.

The case of domestic price controls with constrained supply adjustment is portrayed in figure 3. Price is set at p_c, but the industry is forced to achieve an output target (quota) of Q_s. Consumers receive scarcity rents of $Q_s(p_d-p_c)$ or $Q_{si}(\lambda^{i*}/\gamma^{i*})$, the shadow values calculated from using Q_s as a quota on consumption, while producers lose negative producer rents $(p_s-p_c)Q_s$ or $Q_{sj}(\lambda^{j*})$, the shadow value calculated from using Q_s as a production target. This is reflected by a lump sum transfer to producers in the MESS system.

There is no direct way of estimating the negative producer rents arising from constrained supply in the presence of price controls. However, indirect estimates can be obtained. Sectors with quantity constraints combined with price controls are characterized by the persistent coexistence of three features: (1) persistent use of social capital in sectors (projects) which, over long periods, cannot yield rates of return greater or equal to the opportunity cost of capital; (2) exercise of political pressure by the government to prevent enterprises (sectors) making losses from going out of business and force them to continue producing; and (3) provision of continual subsidies. We therefore use these features to signal the existence of negative producer rents arising from the combination of (mostly soft) quantity and price controls.

We take the rate of interest on Yugoslav foreign loans in 1987 (10.3%) to be the opportunity cost of public capital. For sectors with rates of return on capital

below the opportunity cost of capital, the negative producer rents are computed by by applying the difference between the two rates to the value of the base period capital stock. The sectoral rates of return are computed at prices including rents from import-quotas and domestic price controls, and with respect to a re-priced capital stock that reflects investment rents. The results of this calculation indicate the existence of sizeable negative producer rents in agriculture, other industries, and transportation, and very low negative producer rents in iron and steel.[3]

Table 4 traces the negative producer rent flows throughout the SAM. We reconstruct the flow of negative producer rents by first entering the positive corrections to the rate of return on capital for sectors in which the opportunity cost of capital is higher than the rate of return in the sector. That is, we assume that the negative producer rents are fully reflected in the corrections to the imputed value of capital services in each sector.

The negative producer rents are then split between enterprises and government in each sector, in proportion to the manner in which the government favors each sector. In agriculture, for example, government bears 70% of the opportunity loss, while in iron and steel it bears 90% of the loss. By contrast, in "other industries" -- a sector that the government discriminates against-- enterprises bear two thirds of the opportunity loss. On the average, enterprises directly bear only 35% of the negative producer rents. The government absorbs the rest in the form of low interest loans, "selective credits" from the national bank, interest forgiveness, grants from a "reserve fund" established by legally mandated reserve-deposits from all enterprises, and by merging of profitable with unprofitable enterprises and banks.

However, in absorbing the estimated 2/3 of the negative producer rents, government is partially acting merely as an intermediary for redistribution between well-off and worse-off companies. We estimate that only roughly 50% of negative producer rents assigned to the government in activity columns was ultimately borne

[3] Correcting for price distortions and trade constraints entirely eliminates the apparent negative producer rents in energy and construction calculated at distorted prices and virtually eliminates them in iron and steel, thus indicating a potentially efficient use of capital in these sectors. Implicit subsidies presently passed on to investing and high-energy-consuming sectors are caused only by distorted prices.

by the government This estimate is based on Central Bank data concerning the relative size of capital subsidies extended through soft agriculture-related loans and other "selective credit" instruments, as well as on data about Central Bank assumptions of "foreign exchange losses". For the remaining 50%, the government is effectively compensated by "well-off" enterprises as reflected in the entry in the cell at the intersection of the government-income row and enterprise column. This entry indicates a redistribution among enterprises in different sectors. Such redistribution was still the practice in Yugoslavia in 1987, although subsidies to individual firms across regions were very unlikely.[4]

Table 4: SAM of Negative Producer Rent Flows (Billion 1987 Dinars)

	ACTIVITIES				LAB			HOUSE		INV-		
	AGRI	IRON	OTIN	TRAN	OR	CAP	ENT	HOLDS	GOV-IN	SAV	ROW	Total
ACTIVITIES	0	0	0	0	0	0	0	0	0	0	0	0
LABOR	0	0	0	0	0	0	0	0	0	0	0	0
CAP	928	66	551	680	0	0	0	0	0	0	0	2225
ENT	-316	-7	-369	-170	0	2225	0	0	0	0	0	1364
HOUSEHOLDS	0	0	0	0	0	0	0	0	0	0	0	0
GOV-IN	-612	-59	-182	-510	0	0	682	0	0	0	0	-682
INV-SAV	0	0	0	0	0	0	682	0	-682	0	0	0
ROW	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	-0	0	0	2225	1364	0	-682	0	0	

For acronyms see footnotes in table 1.

Effect of Controls: The Rent-MESS System

Table 5 presents the SAM incorporating all the rent (MESS tax) adjustments arising from import quotas, domestic price adjustments, and combined price-quantity controls. For brevity, we refer to this SAM as the "revealed-MESS-SAM". Comparison of the revealed-MESS-SAM of table 5 with the original SAM of table 1 indicates that:

First, the accounting or tax adjustments required to account for distortions are pervasive. The only unadjusted transactions are the entries in the "rest-of-the-world" columns and rows, since they are already valued in the domestic-currency-equivalent of world prices. (Of course, in a behavioral model, these entries would also

[4] Intraregional capital-subsidy flows were often done as a part of bigger financial packages for bailing out less developed regions: Bosnia, Macedonia, Montenegro, and Kosovo all received such transfers in the late 1980's .

Table 5: SAM with Base Flows Corrected for Cummulative Rents/MESS Flows

	AGRI	ENER	IRON	META	CHEM	TEXT	FOOD	OTIN	CNST	TRAN	OPSE	NPSE	LABHS	LABSK	LABUN	CAP	ENT	RHHL	MHHL	UHHL	GOV-IN	GOV-MX	GOV-SL	INVSAV	ROWCL	ROWCV	Total
AGRI	3262	15	5	9	175	313	3959	361	39	174	206	270	0	0	0	0	0	546	1270	823	0	43	18	942	60	235	12726
ENER	413	4253	853	455	576	200	191	465	198	992	713	376	0	0	0	0	0	101	448	1203	0	38	45	78	65	254	11916
IRON	7	38	2915	2176	79	26	19	116	260	46	118	119	0	0	0	0	0	0	0	0	0	193	31	732	156	608	7636
META	128	234	215	4799	179	99	130	248	459	619	638	888	0	0	0	0	0	114	484	1203	0	411	30	7486	509	1987	20860
CHEM	517	146	129	578	3582	768	318	826	88	151	191	837	0	0	0	0	0	58	235	542	0	166	12	874	209	816	11041
TEXT	41	19	24	262	80	2800	31	144	40	212	160	230	0	0	0	0	0	154	721	1945	0	126	9	1260	233	907	9401
FOOD	824	0	0	2	58	242	2428	6	0	178	1071	320	0	0	0	0	0	243	1199	3244	0	56	9	1078	80	312	11350
OTIN	64	45	132	366	205	78	131	1067	1330	176	255	262	0	0	0	0	0	83	265	845	0	137	31	830	145	566	7013
CNST	41	50	14	163	27	14	16	60	1944	148	124	404	0	0	0	0	0	3	15	40	0	0	0	5800	114	444	9420
TRAN	356	26	354	906	444	206	268	507	1049	1335	794	407	0	0	0	0	0	347	1416	3268	0	0	0	1191	419	1634	14926
OPSE	336	372	710	783	465	273	208	319	381	1174	733	669	0	0	0	0	0	237	1197	3806	0	6	1	506	350	1363	13891
NPSE	51	49	22	211	103	47	81	52	83	343	277	353	0	0	0	0	0	95	421	1129	14502	0	0	0	0	0	17819
LABHS	461	78	43	272	83	63	76	68	139	420	179	2720	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4603
LABSK	391	196	106	713	111	176	132	172	505	1096	786	1781	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6164
LABUN	3418	528	306	2149	575	1670	776	1134	1622	3583	2817	3563	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22142
CAP	2343	2848	1055	1861	1722	1003	1383	971	928	3687	2797	3969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24567
ENT	-316	0	-7	0	0	0	0	-369	0	-170	0	0	0	0	0	22023	0	0	0	0	0	0	0	0	0	0	21162
RHHL	0	0	0	0	0	0	0	0	0	0	0	0	159	356	1555	256	0	0	0	0	107	0	0	0	2	369	2804
MHHL	0	0	0	0	0	0	0	0	0	0	0	0	989	1893	5202	290	0	0	0	0	1231	0	0	0	1	245	9850
UHHL	0	0	0	0	0	0	0	0	0	0	0	0	2343	2575	10982	111	0	0	0	0	5302	0	0	0	2	431	21746
GOV-IN	-405	280	5	588	159	316	192	58	355	522	561	614	1112	1340	4403	0	9887	37	188	504	0	0	4186	0	-48	-1129	23726
GOV-MX	57	70	85	452	229	85	30	54	0	0	5	0	0	0	0	0	0	0	0	0	110	0	0	0	0	0	1177
GOV-SL	124	1154	0	1022	379	532	711	337	0	0	76	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4373
INVSAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1888	11275	785	1993	3194	2474	0	0	0	93	-924	20777
ROWCL	89	851	290	466	387	109	19	91	0	33	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2390
ROWCV	524	664	381	2627	1422	380	251	328	0	206	1334	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8117
Total	12726	11916	7636	20860	11041	9401	11350	7013	9420	14926	13891	17819	4603	6164	22142	24567	21162	2804	9850	21746	23726	1177	4373	20777	2390	8117	

For acronyms see footnote to table 1.

change since the price/tax adjustments for distortions imply changes in the real exchange rate.)

Second, for Yugoslavia as of 1987, these adjustments are not out of line with what would be found in a typical semi-industrial non-socialist country.

Third, there is a large dispersion in the distribution of rents (taxes) among actors.

Fourth, Yugoslavia as of 1987 does not appear to be a case of haphazard or conflicting distortions. The distortions arising from trade restrictions and the those arising from domestic controls seem to reinforce, rather than cancel, each other. Furthermore, the incidence of rents accurately reflects the conscious choice of instruments to achieve stated social policy objectives. It reflects a policy of support of "modern" industries through provision of subsidized inputs. It also reflects a policy to provide basic goods and services at prices that place them within reach of most households. (This, of course, is not to say that the distortions are optimally chosen Nor do we imply that the policy of using distorted prices to foster social policy is a good one. Indeed, we argue quite the opposite.)

Fifth, the pattern of indirect support of "modern" industries through subsidizing input industries seems to have been overdone. The average rents accruing to "basic input" industries are more than twice as high as those accruing to the industries whose modernization the subsidies are intended to support. A policy of correct output prices for basic industries coupled with production subsidies to "modern" industries is more efficient, in the sense of requiring less rents.

Sixth, on the "basic needs" side, the rents to consumers are of the order of 12% of the consumption basket.[5] The cost of achieving these price reductions via explicit and implicit subsidies appears to be much larger than the decreases in consumer prices it accomplishes. If measured in forgone gross profits, the cost is 2.4 times larger than the benefits acquired through cheaper consumer goods; and total

[5] The calculated consumer rents underestimate rents from underpriced non-productive services. Housing, as a part of non-productive services, includes only the value current service and maintenance of existing housing stock. It does not reflect the equivalent of "owner-occupied" imputed rent. We did not attempt to correct for the omission of "owner-occupied rent" since it does not appear in the official statistics. We thus greatly underestimate the subsidies accruing to consumers, given that market clearing apartment rents in Yugoslavia are 10 to 15 times bigger than controlled rents on socially owned apartments.

rents are more than 5.5 times bigger than consumer rents. Even the pure fiscal costs alone have a benefit-cost ratio that is smaller than unity (.85). A policy of pricing consumer goods and services correctly and then using lump sum subsidies to households is fiscally more efficient.

Seventh, subsidies through investment in fixed assets are the main mechanism for subsidizing production. This imparts an investment bias to the economy. Overall, the net subsidies to activities through intermediates are negative. Net subsidies through intermediates are calculated as gross subsidies received by the activity, via smaller cost of intermediate inputs, minus gross subsidies paid by the activity, via smaller prices on its final good sales. For all goods and services, net subsidies are about -10% of GDP while subsidies through investment are +2.5%. There are significant and systematic intersectoral variations, however.

Eighth, in the first instance, profit rates bear the brunt of the distortions. The ratio of rents to base flows is the largest in the capital-row of the revealed-MESS-SAM. The dispersion in the ratio of rents to base flows is also the biggest, varying from +126% of profits to -22%. Clearly, the apparent rates of return are very unreliable indicators of true profitability.

Ninth, unlike the case for a typical semi-industrial country, the major distortions in Yugoslavia are due to domestic controls. Import controls account for only 13% of total rents, 2% of 1987 GDP at factor costs, 6.1% of total price distortions and 14.2% of distortions in rates of return to capital. By contrast, domestic price controls account for 87% of total rents, 13% of base GDP at factor costs, 41% of total distortions in prices and 96% in distortions in rates of return to capital.

Tenth, the existence of distortions complicates the formulation of economic policy. Explicit subsidies tell only a small part of the picture. While the general pattern of subsidies, including rents, appears to be still in line with the overall intent of policy in Yugoslavia, relative subsidies through rents are different from relative overt subsidies, so that it is easy to over or under-subsidize a particular sector or institution.

Eleventh, the macro aggregates are all bigger with prices that reflect the existing major distortions. Adjusted gross output and GDP at market prices are 13.7% larger than in the 1987 base. Adjusted consumption is 16% above the base and

household incomes are 9% greater. Trade represents a smaller share of GDP than in the base. There is a significant change in the functional distribution of income, with the share of capital income being 7% higher than in the base and the share of labor income 2% lower. There are also major changes in the government accounts; government expenditures are 14.8% higher at corrected prices and government savings are 22% less. At adjusted prices, the domestic price level, using domestic absorption, is 12.6% higher and the real exchange rate is correspondingly overvalued.

4. HOW STRONG IS THE STATIC CASE FOR REFORM?

Our analysis of the distortions to measured flows in the previous section reveals several partially hidden biases in the Yugoslav economy that are induced by the existing distortions. The overall impact of the distortions is an "anti-production" and "over-investment" bias within enterprises. The net effect of price and quantity controls on inputs and outputs is a decrease in enterprise profits (negative net intermediate rents over all enterprises and sectors). This decrease is partially recouped by positive net subsidies to investment. The net effect is to encourage the familiar build-up of excess capacity and capacity under-utilization in enterprises in socialist countries. This anti-production bias is over and above the bias which low wage incentives and rent-seeking on the job impart to labor productivity. Thus, the general import of the distortions introduced by the soft controls is to bias the system towards low factor productivity.

On the average, enterprises gain through subsidies to inputs while losing through the subsidies which they, in turn, must grant buyers of their products to qualify for these input subsidies. This policy of "subsidy through intermediates" offers incentives to enterprises to use technology that is intermediate-input intensive. This feature of socialist production is a familiar finding in international comparisons between socialist and non-socialist semi-industrial countries. The succession of reforms of socialist systems has been aimed at increasing total factor productivity and reducing input-output ratios. Our analysis suggests that these features of socialist economies are built into the price and quantity control systems they use.

Parallel to these distortion-induced biases to productivity, we found biases in incentive systems that favor or penalize types of enterprises and types of activity.

We found a mild pro-export bias in Yugoslavia as of 1987. Even though at corrected prices the average Yugoslav enterprise loses 2.6% per unit of exports (thus making itself vulnerable to charges of dumping), it loses even more (5.6%) by producing for the domestic market. We also found a pro-consumption bias to controls (the net rate of production subsidy is -2.7% for consumption and -6.3% for other production for the domestic market). On the production side, "modern" industries are the only ones in which distortions introduce a positive bias to produce. Basic industries and services all have negative production incentives.

On the distribution side, the hidden distortions favor capital over labor. (Of course, capital is regarded, both ideologically and in fiscal practice, as social capital). The hidden distortions also serve to mask some inequalities, even on the average over large groups of consuming households (skilled vs unskilled and urban vs rural). These results make the apparent differences in distributional performance among socialist and semi-market developing countries smaller than they appear to be on the basis of official statistics.

Thus, the net effect of the current system of controls is to introduce biases into the economy. Some of these biases are intentional, and some are the unintentional byproducts of controls. The pro-investment, pro-modern industry, pro-consumer goods production biases of policy are intentional. The anti total-factor productivity biases are unintended consequences of the pattern of distortions introduced by the price and quantity controls. So are the encouragement of wasteful, resource-using, production technologies that promote heavy use of intermediates, and unnecessary build-up of capacity coupled with substantial capacity underutilization.

How distorted is the Yugoslav economy when all is said and done? No economy is ideal. All economies have some open and hidden wastes, misguided regulations, and inappropriate biases or inefficient use of instruments. And institutions in all economies have inherent distributional and activity-promoting biases. Is the Yugoslav cup half empty or half full? On the half full side, there is a surprising coherence to the pattern of hidden incentives. At first (and even second) blush, the system of rents from various sources appears so complex to economists used to being able to employ market prices plus tax systems to trace the incidence and biases imparted by policy that <u>any</u> coherence in the resulting pattern, efficient

or not, appropriate or not, is surprising. Economic institutions in Yugoslavia appear to have adapted over the years to the presence of "soft" price and quantity controls in the system. Different interest groups have managed to voice their concern when "undersubsidized" and conceal "excess profits" arising from oversubsidization. By the same token opposing interest groups, appear to have been effective in preventing large departures from the existing constellation of "controls" in order to preserve their present distribution of overt and covert benefits.

On the half empty side, this "generalized bargaining system" has been very time consuming and has often failed to converge. Up until 1988, the imbalances created by non-convergence were successfully bridged by either foreign borrowing or increased (implicit) domestic public debt. When the resulting accumulated domestic macro imbalances led to accelerated inflation, the time required for negotiated adjustment became prohibitively long. This led to a breakdown of the generalized bargaining system. Our analysis of distortions also suggests that the biases imparted by the system of hidden rents promote significant productivity losses and wasteful resource use, and hence lead to lower ultimate living standards than would be possible with the overt use of prices and tax instruments. Moreover, at several places in section 3 we pointed out that, even in its own terms, the system of indirect support of certain activities and sectors is fiscally inefficient.

When all is said and done, we estimated that the totality of flow-rents at existing quantities in Yugoslavia as of 1987 was only of the order of 13-15%. But how much resource waste do these consumer-and-producer-rent rectangles promote? We now turn to an analysis that permits us to answer this question.

5. THE MODELLING OF REFORMS AND EXPERIMENT RESULTS

Our experiments with reform were performed with a computable general equilibrium (CGE) model of Yugoslavia as of 1987. This model was adapted from a set of computable general equilibrium models of Yugoslavia that reflected the special features of socialist trade and self-management (Vujovic and Labus 1990, and Adelman, Vujovic, Berck and Labus, 1990). For the current experiments with reform we made these models more neoclassical. We suppressed the distinction between convertible and clearing-currency trade. (In initial experiments with reform using

a model that had trade split between the two currency areas but faced the same exchange rates and demand elasticities, clearing area trade was phased out by the model as it is being phased out in reality by recent developments in Eastern Europe). We also made wage distribution rules more neoclassical, removing the specific wage setting rules in force in that model and replacing them with marginal productivity rules. The demand side of the labor market was already neoclassical in the model from which we started. We used a fixed exchange rate closure in foreign trade and either a fixed-wage or a full-employment closure in the labor market. This made the model a standard CGE with the usual features: two level CES production functions with three labor skills and sector specific capital but mobile labor; linear expenditure systems for consumption by each of three classes of households (rural, urban and mixed rural-urban); Armington import functions and constant elasticity of transformation domestic and export supply functions; and market-clearing prices for commodities. There was only one nontradable sector, "non-productive services". This sector is also the only one consumed by government. The exchange rate was used as numeraire.

The CGE-base for comparison was a base with tariffs and subsidies imposed on the initial SAM of table 1, the "market-price-SAM" in actual 1987 prices, to make it equivalent to the revealed-MESS-SAM of table 5 that incorporates existing consumer and producer rents. The SAM used for the base-CGE replaces consumer and producer rents with sets of commodity-taxes or subsidies and import-tariffs on activities; and a set of consumer and producer lump-sum transfers for institutions. The new tax instruments include "quota-tariffs" on imports and domestic-commodity taxes; investment subsidies, production subsidies, and subsidies compensating for negative producer rents to enterprises; and consumption subsidies to consumers. Of these, the subsidies compensating for negative producer rents and the consumption subsidies are lump-sum. The investment subsidies in fixed assets are ad-valorem, computed through the investment matrix, on exogenously specified investment by sector of destination. The production subsidies were ad valorem, and were computed on both current use of intermediate inputs and net changes in inventories. The net balance of these transfers is absorbed by government savings. One can think of this step as "revealing the MESS". The solution of the base CGE reproduces the real

activities and real income flows underlying the revealed-MESS-SAM of table 5, just as the theory indicated it would. It thus generates a SAM that is identical to table 5. This is the departure point for the experiments with reform.

There is some question whether, psychologically, the participants in the economy actually perceive the SAM of table 5 or whether they have the "money illusion" of the SAM of table 1. We believe that perceptions are split between the two tables, and that herein lies one of the socio-psychological difficulties of the transition process. We believe that consumers and producers in socialist economies perceive the incomes of table 5 and the lower prices of table 1, forgetting or suppressing the rent-seeking activities, barter, and grey-market transactions that accompany the SAM of table 1. They thus have an inconsistent picture of their reality. Part of the transition process involves making the economic actors aware of the SAM of table 5, by revealing the correct prices underlying the SAM of table 1, so that their perceptions become internally consistent.

The experiments with transition reported below represent two kinds of reform processes: reductions in taxes and subsidies, on the one hand, and changes in the institutional rules underlying factor and commodity markets, on the other. Reductions in taxes and subsidies are necessary to convert a third-best equilibrium into a second-best one. We calculate two steps in the tax reform process-- a 50% cut in all taxes and subsidies imposed to transform the table-1 SAM into the table-5 SAM, and the full abolition of all of these taxes (100% cut). When tariffs, taxes, and subsidies are completely removed, the (exogenously set) exchange rate is devalued to the value calculated for the "true" exchange rate by comparing the revealed-MESS-SAM and the original SAM. The devaluation is set a half this amount for the 50% tax/subsidy reductions. This part of the reform process can be thought of as "undoing the MESS".

For each of these tax-cum-subsidy-reduction steps we model cummulative reforms in commodity and factor market institutions. The first stage of reform consists of neoclassical clearing of commodity markets with no capital markets i.e. capital remaining sector specific. The second stage consists of freeing capital markets as well. This stage is modelled by allowing capital stock to move between sectors in the short run so as to equalize rates of return. The reallocation of capital is decided

within the general equilibrium framework of the model.

Each of these institutional regimes is considered with two different types of labor markets. In the first labor market, worker pressures and unions are strong enough to maintain nominal wages but firing and hiring of workers is possible. In the second labor market, firms are able to set wages, but there is a target employment level at the macro-economic level (in most of our experiments the target employment level is full-employment).

Each stage of reform is also calculated with or without some increases in factor productivity. Increases in labor productivity are likely for either of two reasons: the fear of firing combined with the possibility of real wage improvements under the first type of labor market regime or the fear of decline in both nominal and real wages under the second type. Increases in capital productivity are likely to result from the liberalization of the trade regime, with the availability of freer imports of intermediates and upgrading of machinery. The productivity improvements assumed in the experiments are mild, averaging 4.5% for capital and and 1.7% for labor.

Table 6 summarizes some of the sectoral results while table 7 presents the macroeconomic results of reform. We focus mostly on the full MESS reduction, 100% cut, results. The 50% cut results are similar in character, but less dramatic in effect. Reducing taxes and subsidies is a deflationary process. This means that the tax reform is always good for exports and usually for the trade balance.[6] The general deflation extends to the consumer price index but food prices rise relative to the consumer price index. The reforms are therefore always good for the rural sector. Depending on the labor market regime, nominal wages remain either constant or fall, but the real wages of the employed always rise. Nevertheless, unless the commodity market reforms are accompanied by capital market reforms, urban real incomes and real consumption decline.

The static effects of the reforms are not dramatic. Commodity market reforms unaccompanied by the establishment of capital markets lead to slight

[6] The exceptions to this are in the commodity plus capital market experiments with fixed nominal wages and 50% and 100% tax/subsidy reductions and the commodity plus capital market experiments with flexible nominal wages and 100% tax/subsidy reduction. The trade balances in these experiments are, respectively, 96.7% ,92.4% and 72% of base.

Table 6: Main Reform Experiments - Real Sectoral Data (Base=100)

	BASE	COMMODITY MARKETS REFORM				CAPITAL MARKETS REFORM			
	Values	Fixed Wages		Full Employment		Fixed Wages		Full Employment	
		50%	100%	50%	100%	50%	100%	50%	100%
EMPLOYMENT									
AGRI	1009.6	96.6	93.6	97.8	95.7	100.3	99.9	101.5	102.0
ENER	155.2	99.7	100.3	101.7	103.7	102.6	104.9	103.7	106.9
IRON	132.3	102.8	108.4	106.8	115.6	103.3	107.4	105.2	111.0
META	763.0	98.1	96.5	100.2	100.2	101.0	101.5	102.5	104.3
CHEM	187.1	100.8	103.1	104.0	108.8	103.9	107.6	105.8	111.2
TEXT	547.4	96.2	92.6	98.4	96.5	100.3	99.6	102.5	103.5
FOOD	246.4	95.5	91.8	97.1	94.5	101.8	102.7	103.7	106.0
OTIN	424.8	94.0	89.2	96.0	92.5	99.5	98.5	101.3	101.6
CNST	691.9	100.1	100.4	100.6	101.3	101.0	101.9	101.5	102.7
TRAN	1141.5	98.0	96.3	99.8	99.5	102.1	103.3	103.8	106.4
OPSE	674.1	101.1	102.8	102.8	106.0	104.6	108.8	106.4	112.2
NPSE	1071.1	100.0	100.0	100.0	100.0	110.3	117.8	110.4	117.7
Total	7044.4	98.6	97.7	100.0	100.0	103.8	106.5	105.0	108.6
By skill:									
High-skilled	520.4	99.3	98.7	100.0	100.0	106.8	111.6	105.0	108.6
Skilled	1053.1	99.0	98.5	100.0	100.0	104.4	107.6	105.0	108.6
Unskilled	5470.9	98.5	97.3	100.0	100.0	103.1	105.2	105.0	108.6
CAPITAL STOCK									
AGRI	22745.6	100.0	100.0	100.0	100.0	100.6	95.4	97.6	95.0
ENER	24628.2	100.0	100.0	100.0	100.0	104.7	103.3	102.6	104.5
IRON	10241.4	100.0	100.0	100.0	100.0	103.9	103.1	101.8	104.4
META	14432.5	100.0	100.0	100.0	100.0	101.3	97.0	98.6	97.2
CHEM	9631.1	100.0	100.0	100.0	100.0	104.2	102.8	101.8	103.6
TEXT	6668.9	100.0	100.0	100.0	100.0	99.8	94.0	96.8	93.5
FOOD	8551.4	100.0	100.0	100.0	100.0	101.4	96.9	98.4	96.5
OTIN	9425.8	100.0	100.0	100.0	100.0	99.8	94.1	97.1	94.2
CNST	7792.4	100.0	100.0	100.0	100.0	103.0	100.1	100.0	99.8
TRAN	35797.5	100.0	100.0	100.0	100.0	101.6	97.5	98.7	97.2
OPSE	15753.5	100.0	100.0	100.0	100.0	104.1	102.6	100.9	102.0
NPSE	13711.5	100.0	100.0	100.0	100.0	113.7	117.7	110.6	117.7
Total	179379.7	100.0	100.0	100.0	100.0	103.0	100.0	100.2	100.0
PRODUCTION									
AGRI	10757.8	97.8	95.9	98.7	97.2	99.3	98.2	100.0	97.8
ENER	7324.2	99.9	100.1	100.5	101.0	101.9	103.7	102.7	103.2
IRON	5622.9	101.0	102.9	102.4	105.3	101.7	104.7	102.8	103.7
META	15418.3	98.9	98.1	100.1	100.1	99.7	99.4	100.6	98.7
CHEM	7008.0	100.3	101.2	101.6	103.4	102.2	104.7	103.3	103.7
TEXT	7987.4	97.8	95.7	99.1	98.0	98.9	97.2	99.9	96.8
FOOD	9321.2	98.1	96.6	98.8	97.7	99.8	99.2	100.4	98.9
OTIN	6107.6	97.2	94.8	98.1	96.4	98.1	96.2	98.9	95.7
CNST	8264.0	100.1	100.3	100.5	101.1	100.8	101.5	101.1	101.1
TRAN	13484.3	98.9	97.9	99.9	99.7	100.5	100.7	101.4	100.2
OPSE	10166.5	100.7	102.0	102.0	104.1	103.5	106.9	104.7	106.3
NPSE	14224.7	100.0	100.0	100.0	100.0	110.3	117.8	110.4	115.1
Total	115686.9	99.2	98.7	100.1	100.2	101.7	103.0	102.5	102.2
NET EXPORTS									
AGRI	-317.6	98.2	99.1	92.2	89.5	103.2	107.9	100.1	110.5
ENER	-1196.1	98.8	98.1	98.5	97.7	101.8	103.1	101.8	103.2
IRON	93.9	130.9	173.8	156.7	215.7	119.2	162.3	137.3	148.8
META	-596.4	97.5	93.5	76.5	58.9	110.4	115.5	98.0	125.2
CHEM	-784.6	94.7	88.7	89.9	80.7	101.1	98.8	98.3	100.7
TEXT	650.8	98.0	94.5	106.0	108.2	94.5	87.7	99.4	84.4
FOOD	122.7	90.7	79.8	107.6	108.1	81.0	61.5	90.6	53.8
OTIN	291.4	96.7	94.7	106.2	110.2	89.7	82.2	95.6	78.2
CNST	557.4	101.4	103.1	103.6	106.8	101.3	103.0	102.7	102.0
TRAN	1814.3	100.7	101.8	104.3	107.8	100.6	101.4	102.8	99.8
OPSE	322.4	132.9	169.3	158.2	210.5	122.6	153.7	137.5	142.4
NPSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	958.3	120.7	143.8	169.6	224.5	91.3	94.9	120.6	72.9
RELATIVE PRICES (TRADED vs NONTRADED)									
AGRI	100.0	104.4	111.8	103.8	110.4	112.9	127.5	112.3	124.6
ENER	100.0	95.1	93.2	98.0	98.0	102.4	104.5	103.0	101.2
IRON	100.0	97.2	96.0	98.7	98.3	104.0	106.2	104.1	103.1
META	100.0	102.4	108.0	103.6	109.8	110.0	121.5	110.3	118.0
CHEM	100.0	97.2	96.8	99.0	99.6	104.3	108.2	104.9	104.6
TEXT	100.0	101.1	105.0	101.0	104.4	109.5	120.2	109.0	116.9
FOOD	100.0	101.4	105.3	101.0	104.4	110.2	121.2	109.6	118.2
OTIN	100.0	107.3	118.7	107.5	118.8	117.4	138.2	116.9	134.4
CNST	100.0	98.0	98.8	97.1	97.1	105.5	111.6	104.5	109.2
TRAN	100.0	100.8	104.9	99.7	102.9	109.0	119.5	108.1	116.9
OPSE	100.0	95.0	92.6	94.7	92.0	102.0	103.9	101.5	101.3
NPSE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	100.0	100.0	102.7	100.3	103.1	107.8	116.2	107.5	113.1

For acronyms see footnote to table 1.

Table 7: Institutional Reform in Commodity and Factor Markets - Real Aggregate Results (Base=100)

		Reform of All Commodity Markets						Reform of Commodity and Capital Markets						Departures from the Initial Design of the Gradual Transition to Market Economy					
	Base	Fixed Nom. Wages Reduction in Tax/Subs			Fixed Employment Reduction in Tax/Subs			Fixed Nom. Wages Reduction in Tax/Subs			Fixed Employment Reduction of Tax/Sub			Biased Reduct. of Tax& Subsid.	Wage Push Inflation Spiral Steps				Increased Consum. from Gov.
		50%	100%	100%+e	50%	100%	100%+e	50%	100%	100%+e	50%	100%	100%+e		1	2	3	4	
GDP																			
Total GDP	62856	99.3	98.7	101.6	99.8	99.6	102.7	102.8	104.8	106.3	103.3	103.9	108.6	99.3	99.3	99.1	98.9	98.7	100.1
Consumption	42201	98.6	97.3	100.6	98.4	97.0	100.3	104.6	107.4	108.7	104.8	106.6	109.8	98.8	98.6	98.7	98.7	98.8	99.9
Investment	19697	99.6	99.3	99.6	99.4	98.9	99.1	99.5	99.1	99.3	99.4	99.2	98.7	99.8	99.6	99.7	99.8	99.9	99.5
Exports	11465	101.2	103.0	106.4	104.0	107.7	112.3	101.3	103.2	106.2	103.1	101.8	113.3	100.2	101.2	100.3	99.3	98.3	101.9
Imports	-10507	99.4	99.3	99.8	98.0	97.0	97.2	102.2	103.9	103.3	101.5	104.4	100.9	99.4	99.4	100.0	100.5	101.1	100.3
LABOR MARKETS																			
Nomin. Wages	1.000	100.0	100.0	100.0	93.1	89.0	87.0	100.0	100.0	100.0	96.1	93.4	85.8	100.0	100.0	102.5	107.2	114.2	98.4
Employment*	7044	98.6	97.7	97.1	100.0	100.0	100.0	103.8	106.5	103.7	105.0	108.6	108.6	98.6	98.6	98.2	97.7	97.3	100.0
Real Wages	1.000	103.2	107.9	112.2	101.1	104.3	107.8	101.5	105.0	109.6	100.6	95.7	105.1	101.3	103.2	103.9	104.7	105.4	101.9
PRICES																			
GDP Deflator	1.000	97.8	93.8	89.3	92.7	85.9	80.4	97.6	93.3	89.1	94.6	96.3	78.9	100.0	97.8	99.7	103.6	109.8	96.6
CPI	1.000	96.9	92.7	89.2	92.1	85.3	80.7	98.5	95.2	91.2	95.6	97.6	81.6	98.7	96.9	98.7	102.4	108.3	96.5
Food Prices	1.000	99.4	97.2	93.5	94.1	88.9	84.0	101.8	101.5	96.9	98.7	104.0	86.4	100.3	99.4	101.3	105.3	111.5	99.0
Exch.Rate	1.000	106.1	112.6	112.6	106.1	112.6	112.6	106.1	112.6	112.6	106.1	112.6	112.6	104.0	106.1	106.1	108.1	112.3	106.1
HOUSEHOLDS DISPOSABLE INCOME																			
Rural	2230	99.7	100.6	103.8	100.3	101.8	105.4	102.0	104.5	106.5	102.7	104.0	109.3	98.7	99.7	99.5	99.3	99.1	100.8
Mixed	8602	97.8	96.1	99.1	97.5	95.6	98.7	101.0	101.5	103.2	101.4	101.8	104.1	97.7	97.8	97.9	98.0	98.1	100.5
Urban	21018	97.0	94.0	96.8	96.7	93.5	96.3	100.3	99.3	100.9	100.6	99.7	101.8	97.6	97.0	97.1	97.2	97.3	99.6
HOUSEHOLDS CONSUMPTION (INCLUDING OWN ONSUMPTION)																			
Rural	1981	100.2	101.8	105.0	100.5	102.4	105.9	102.8	106.2	108.1	103.2	105.6	110.0	99.0	100.2	100.1	100.0	100.0	101.0
Mixed	7670	98.3	97.3	100.4	97.9	96.8	99.8	101.5	102.8	104.4	101.8	103.0	105.2	98.0	98.3	98.4	98.6	98.7	100.6
Urban	18048	97.1	94.1	96.9	96.8	93.6	96.5	100.3	99.5	101.0	100.7	99.8	101.9	97.6	97.1	97.2	97.3	97.4	99.6
GOVERNMENT																			
Expenditure	14502	100.5	100.7	104.7	100.4	100.6	2.2	111.7	119.9	120.5	111.6	116.9	122.0	100.6	100.5	100.5	100.5	100.5	99.8
Savings	2474	91.7	80.7	79.1	87.3	74.4	71.8	96.4	87.6	84.7	93.9	89.7	76.5	97.8	91.7	93.4	95.1	96.8	88.1

*In thousands of employed persons.

declines in real GDP, consumption, urban and mixed household disposable incomes and consumption unless accompanied by improvements in efficiency. Improvements come mostly from the liberalization of capital markets and from efficiency gains.

The reform scenario with the most adjustment pain is that of commodity reform without capital markets and with fixed nominal wages. In the three experiments reflecting this scenario we have up to 2.9% additional unemployment[7], drops in urban real disposable incomes and consumption of up to 6%, and about six sectors with declining employment. In the experiment reflecting complete removal of MESS taxes and subsidies, shifts in the structure of relative prices range from -7.4% (other productive services) to +18.7% (other industry). Government savings decline by about 20%. Since government savings include interest payments to banks, this decline indicates a sharp increase in the traditionally defined government deficit. This is the scenario that both the population and the government of socialist countries fear. Of course, in our gradual approach we reach it only in the second step.

The brunt of the transition cost is borne by non-wage income recipients and, ultimately, household consumption. This reflects cuts in lump-sum transfers and affects urban households most heavily. Their real income is almost 6% lower at the end of transition process. There is an export boom due to devaluation reinforced by a significant (6.2%) net domestic deflation caused by the removal of MESS taxes/subsidies. The growth of exports partially compensates for the decline of all other components of GDP. The trade surplus improves more than 40% contributing to an improved external position of the country. The proportionate reduction in MESS taxes/subsidies changes relative prices which, in turn, drive changes in sectoral production and sectoral composition of trade. The production of wage goods falls and the production of heavy industry and services goes up. Given the fixed nominal wages and fixed capital stock by sector, sectoral employment bears the brunt of induced changes in sectoral production. The dislocations in the labor force are substantial: 240 thousand or 3.4% of the employed lose their jobs; of these 80 thousand find jobs in expanding sectors. But this is the most disruptive reform

[7] Unemployment in Yugoslavia excluding workers temporarily employed abroad was estimated at about 13% of the labor force in 1987. The labor force in the model includes only the employed population in 1987.

scenario. However, it is noteworthy that, even in this worst-case scenario, the nightmare of governments and East European populations -- the economy falling apart -- does not materialize.

The flexible wage scenario suggests a rather good tradeoff between wages and unemployment. In this scenario, real wages are lower (by between 2 and 3 percentage points) than in the fixed wage case, but they are still above the base and there is no new unemployment. In addition, the foreign trade balance is considerably better (70% better than in the reform with fixed nominal wages and 2.25 times better than the base) thus assuaging fears that liberalizing trade will endanger the country's external position. However, the government deficit is somewhat larger and mixed and urban households are faced with somewhat lower (0.5%) real incomes and consumption. The dislocations in the labor force are considerably smaller than with the fixed wage scenario: 113 thousand people or 1.6% of the employed must change jobs from contracting to expanding sectors. The pattern of relative price changes and the pattern of expanding and contracting sectors is very similar to that of fixed nominal wage scenario.

The introduction of capital markets generates a substantial relative improvement over the base, especially when efficiency gains are added. In macroeconomic terms, the transition looks virtually painless, except for a slight deterioration in trade balance over the base. But our model overstates the immediate gains to be expected from the introduction of a capital market, since it is based on a degree of capital reallocation among sectors which can only be accomplished over a period of time, say two or three years. The capital stock in six sectors declines with the largest decline being 6% (textiles and other industries). The largest expansion of capital stock (17.7%) is recorded in non-productive services, a sector with a small capital stock (see table 6, for details).

The impact of capital markets can be gauged by comparing equivalent labor market scenarios with and without capital markets. With fixed nominal wages, the introduction of capital markets makes the largest difference: GDP is 6.1% higher, employment is larger by 8.8%, and household incomes and consumption are about 5% above comparable scenario without the capital market. The losses in urban household real incomes are virtually wiped out by the introduction of capital markets.

The "best" scenario involves gains in factor efficiency. These were assumed to be rather small, (for details see table 8 below) and represent orders of magnitude that might be expected realistically to occur annually, once institutional reforms are carried out. These productivity gains cannot be expected to occur in the absence of the sorts of reforms in factor and commodity markets that are represented in our experiments, although it is probably not necessary to go to the 100% reduction in taxes and subsidies to achieve them. The achievement of gains in productivity has been the major, rather elusive, aim of past partial reforms introduced in most socialist economies. It is also the main driving force behind the desire for sweeping reforms of the socialist economies of Eastern Europe.

Table 8: Productivity Gains - Changes in Efficiency

	E F F I C I E N C Y	I N C R E A S E S			
	Overall	Capital High Sk.	Labor Skilled	Labor Unskilled	Labor
AGRI	1.0%	0.0%	1.0%	0.0%	0.0%
ENER	0.0%	5.0%	1.0%	0.0%	0.0%
IRON	0.0%	10.0%	2.0%	3.0%	3.0%
META	0.0%	5.0%	2.0%	2.0%	2.0%
CHEM	1.0%	10.0%	2.0%	2.0%	2.0%
TEXT	1.0%	3.0%	3.0%	1.0%	1.0%
FOOD	0.0%	5.0%	3.0%	1.0%	1.0%
OTIN	0.0%	2.0%	2.0%	1.0%	1.0%
CNST	0.0%	0.0%	2.0%	3.0%	3.0%
TRAN	0.0%	5.0%	2.0%	1.0%	1.0%
OPSE	0.0%	4.0%	2.0%	3.0%	3.0%
NPSE	0.0%	4.0%	2.0%	3.0%	3.0%
Total:	0.2%	4.3%	1.9%	2.0%	1.6%

For acronyms see footnote to table 1.

With productivity gains which average 4.3% for capital and 1.7% for labor, and a .2% gain in overall efficiency, the reform does not produce economic contraction under any of our institutional scenarios. Efficiency gains contribute most to improved macroeconomic performance when the institutional setup approaches the neoclassical ideal, adding 4.7 percentage points to GDP. They contribute least to GDP when capital markets function but labor markets are rigid (1.5%). Exports react most and investment reacts least to efficiency gains. Across all experiments, higher efficiency benefits all consumer groups, especially rural households.

Our results thus suggest that a less painful transition from socialism to capitalism than is feared by East Europeans in the throes of reform is possible. They

also indicate that the static gains from reform are rather limited. Furthermore, they are once-and-for-all gains. The major gains from reform are dynamic, and reside in the continuing increases in factor productivity which they make possible. Their achievement requires effort, commitment to reform, and government credibility. In the meantime, many things can go wrong. We explore a few, alas not unlikely, scenarios for sabotaging the reform effort.

6 WAYS IN WHICH THE REFORM CAN GO WRONG

Our model results substantially understate the difficulties of reform for many reasons. On the modeling side, we have not incorporated asset and monetary effects that are likely to contribute to inflation. We have also not modelled imperfect information, expectations and uncertainty. Nor have we depicted socio-political opposition to reform or lags in adjustment.

Our results assume that the actors in the system know their production functions. It is not clear that they do. What they know are the input-output relationships with existing, distorted, prices and quotas and under existing institutional constraints on the use of labor.

Our results also assume that management objectives shift smoothly from those pursued under socialism to profit maximization. In reality, this shift is one that needs to be learned. Currently, socialist managers are engaged in optimizing net rents. This implies maximizing rationed inputs, investment allocations, credit and foreign exchange allotments, and direct subsidies while minimizing output targets. They are skilled negotiators with the government and with other enterprises, and have built up a personal network of relationships and reciprocal claims that enable them to carry out these negotiations successfully. In the existing institutional, semi-market Yugoslav environment, their technical and managerial skills, even if they were originally trained as engineers and economists, have fallen into disuse. At best, one can identify some top managers who would be good managers of public enterprises in a market environment. Very few among them would make good managers in a corporate private enterprise sector. Although a lot of socialist managers have become increasingly aware that the present rent-seeking system is not macroeconomically viable, what they see as the alternative is even less

attractive to them personally. It makes some of their personal capital (access to the network), management skills, and management structure within their enterprises obsolete, and depreciates their effectiveness and comparative advantage. They have every personal incentive to oppose the transition. They can mobilize the support of politicians and bureaucrats who, directly or indirectly, appointed them to their present posts, as well as the support of workers who feel threatened by the uncertainties of the reform. By contrast, unlike top managers, technocrats at intermediate levels have every incentive to support a transition to market systems. Their skills have been greatly depreciated by the current system ever since the drive against techno-managers in Yugoslavia in the early 1970s. They have also been severely underpaid, even relative to Yugoslav workers.

Substantial opposition to reform is also likely to come from some currently employed workers. The transition is likely to be opposed by those employed workers who do not expect labor markets and market competition to provide them with jobs or with better career opportunities. Presently, employees enjoy a low but certain cash income, relatively large fringe benefits, and complete job security. The present system suits best well-established, settled, middle-aged, skilled workers who either have second jobs (moonlighting or private agriculture) or enjoy rent-seeking privileges in their social sector job. It is, therefore, likely that the opposition of middle-aged and older workers will be more pronounced, reflecting their smaller taste for risk, and their awareness of their lower ability to compete in the labor market or to start an independent small business. By contrast, the young are likely to favor the reform and competition for jobs, since 80% of the presently unemployed are skilled, below the age of 35, and waiting for their first job. Employees in social sector companies are most likely to oppose the reform. The opposition to reform is likely to be strongest in large subsidized firms, reflecting both the possibility of losing subsidies and larger layoffs. The opposition is likely to be weaker in smaller firms and firms with better economic performance.

Even aside from well-defined opposition by certain groups, the reform process greatly increases the degree of uncertainty in the system. Individuals and groups are generally risk averse, especially in socialist economies, one of whose main advantages is a great deal of predictability. Our model does not reflect the increased

uncertainty and does not model reactions to this increase. To make the reform acceptable, the public needs to be educated that it can be fully compensated in a static sense for the benefits it currently enjoys under the socialist system. The government needs to convince the public that both the details and the overall scheme of the reform are well thought out, internally consistent, and will be applied in practice. Both the government and the program, therefore, need to have credibility. The government also has to have the ability to manage conflict and the explosion of desires and expectations.

In our modeling we have disregarded the role of conflict and expectations in the reform process. Expectations take the form of both desires and fears, and motivate both support and opposition to the reform process. As consumers, the population of socialist countries wants the results it anticipates from reform. As producers, the population fears reform, especially without the sort of legal safety nets built up in the corporate welfare states of the current OECD economies.

Furthermore, as indicated earlier, the population probably does not have an accurate perception of its actual situation. It sees the rationed consumer prices, which our calculations indicate are 15% lower than the rent-or-tax-inclusive prices in the original SAM, while perceiving the living standards of the revealed-MESS-SAM. Price increases brought about by an effort to reveal the consistent picture underlying the existing reality are likely to be interpreted as the beginning of an inflationary spiral. The reform process itself, starting from the revealed-MESS-SAM is deflationary. But people are likely to be aware of the declines in their nominal wages, and unaware that the deflation actually raises their real wages. Scenarios in which workers attempt to defend their nominal incomes and thereby start an inflationary process are therefore likely.

We have modeled the beginnings of such a scenario starting from the 50% MESS-cut with fixed nominal wages (for details see the next to last four columns of table 7). In this scenario, organized workers exert pressure to maintain their nominal wages (step 1). Then, when they realize that their real disposable incomes are 2.5% lower, despite higher real wages, they demand and get nominal wage increases of 2.5%. This, however, leaves them only imperceptibly better off when all is said and done (step 2). But the economy's balance of trade worsens. This invokes

macroeconomic intervention by the government: in an effort to maintain the current account balance, the government devalues by about 2% over step 2. This time organized workers anticipate the effect of the devaluation on their real incomes. They demand nominal wage increases designed to prevent the erosion in the purchasing power of their wages stemming both from past inflation and anticipated current devaluation. The result is the same as in step two, but at an even higher price level, and higher balance of trade deficit. The ensuing devaluation and frustrated efforts at recouping real wages set another round of wage increases and inflation in motion in step 4. By this time the price level has jumped by 6.2% and nominal wages by 7%, about twice as rapidly as in the previous step. The process accelerates even without the effect of expectations and monetary/asset phenomena.

A better approach to maintaining real incomes is modelled in the last column of table 7, in which, starting from the 50% MESS-cut with fixed nominal wages, the government phases out household subsidies less rapidly than other MESS tax/subsidy instruments. While all other MESS subsidies are cut in half, nominal consumer subsidies are only cut by 15%, on the average. This succeeds in maintaining real disposable incomes in this scenario at the base level. The decline in non-rural household real incomes in the face of rising real wages, observed in our reform scenarios without capital markets, is in part due to phasing-out of consumption subsidies. In rural households the phasing-out effect is overpowered by the large share of own consumption and foreign remittances. In the absence of capital markets, attempts to prevent the decline in non-rural household incomes through the labor market are bound to be frustrated, as our inflationary spiral scenario indicates.

Column 14 of table 7 includes a "government-cold-feet" experiment as well, again starting from the 50% MESS-cut with fixed nominal wages. In this scenario, the government reacts to calm fears of excessive budgetary cost of the reform, of consumer prices getting out of hand and of the trade balance deteriorating, by departing from initially conceived cuts in MESS taxes and subsidies. In designing this experiment, we tried to reflect the traditional socialist biases. Specifically, to protect consumers, the government retains subsidies in basic consumer goods (food, energy, transport, and non-productive services). To pursue the present

industrialization and trade strategies, it continues to protect strategic (energy, iron) and "infant"-export sectors (textiles, food, and metals) relatively more than other sectors. It also devalues less than in the 50% scenario, from a fear of inflation. Strategic sectors continue to receive relatively greater production subsidies along with some basic consumer good sectors (food and non-productive services). Finally, energy and transportation continue to be perceived as public infrastructure sectors, which deserve relatively higher investment subsidies. In all these departures, the cuts are in MESS taxes/subsidies are 25 rather than 50 percent.

The results are mixed compared to those of the 50% across the board MESS-cut experiment. The effects on GDP are neutral, as minor increases in consumption and investment are offset by worse export performance. Real wages improve less. The consumption-support program injures rural and mixed households slightly. Only urban households benefit relative to the 50% across the board MESS cut. The government deficit is considerably smaller, due to higher tariff, sales and value added tax collections.[8] With these departures from uniform cuts, the government thus trades off a worse external balance for a better relative position of urban households and for the pursuit of its concept of industrialization.

7. CONCLUSION

Our calculations provide a blueprint for a consistent approach to the reform of commodity and labor institutions of socialist countries. In our paper, we calculate the magnitudes of distortions introduced by the socialist system of prices and controls, and assign their incidence across the economy. The reform process consists of simultaneously lifting the socialist controls and substituting the MESS tax/subsidy system for the existing incidence of rents. We then gradually phase out the MESS.(!)

The results of our calculations suggest that a smooth, relatively painless, transition is economically possible. They also suggest, however, that the static economic benefits attendant upon such a transition are likely to be small and delayed. The major benefits to be expected from reforms are their dynamic impact: the continuing productivity gains which the reforms will enable to take place.

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[8] Sales and value added taxes are ad valorem, and the price level is higher.

Our results and discussion also indicate that the transition process is fraught with pitfalls. As in any economic change, there will be winners and losers. Those who anticipate being potential losers are likely to oppose reform and demand guarantees whose granting will make the transition process more painful than it needs to be and whose outcome is likely to be self defeating. Those who anticipate being potential gainers, and who feel blocked and frustrated by the existing economic system, will favor reform. The conflict among potential gainers and losers is likely to be aggravated by regional and ethnic strife. As a result, uncertainty, fear, and conflict are likely to dominate the actual transition process, despite the inherent economic potential for a smooth transition indicated by our results.

Institutions are not only rules and regulations but also behavior patterns and skills. Institutional reform therefore requires a learning process consisting of the acquisition of new behavior patterns and requiring new skills. It also requires the, perhaps more difficult, process of unlearning behavior patterns and skills that were appropriate to the old institutions but are appropriate no longer. Our modelling effort assumes that this process occurs instantaneously and without friction.

In assessing the real-world import of our results, one should also bear in mind that our model excludes the financial aspects of the transition. Our model does not incorporate the asset-transfer phenomena involved in the privatization of industry and of the housing stock and does not reflect the macroeconomic and financial implications of these asset transfers. We have also not considered the problems generated by the liquidity overhang that characterizes most socialist countries. We therefore substantially understate the inflationary potential of the transition and the likely opposition to the assumption of public-sector-enterprise debt by the government that may be a necessary, but inflationary, component of the transition. This inflationary potential will be reinforced by expectations and by group pressures to maintain present real incomes.

In generalizing our results to transition problems in other socialist countries, one should also bear in mind that they apply to Yugoslavia as of 1987. Yugoslavia is the least economically distorted socialist country; it has the longest experience with the introduction of market aspects and decentralized microeconomic decision making into its economic system; it is internationally more competitive, as

it has imported a large proportion of its equipment and technology from the West; and it has recently succeeded in making its currency convertible into hard currency without much of a ripple.

In view of all these considerations, our paper should be regarded more as a "possibility theorem" than as a forecast.

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