DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS
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UNIVERSITY OF CALIFORNIA AT BERKELEY

WORKING PAPER NO. 591

USING SAM'S TO ACCOUNT FOR DISTORTIONS IN NON-MARKET ECONOMIES

by

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March, 1991

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1. INTRODUCTION

The use of nonmarket mechanisms for allocative and distributive purposes is common in both developing and socialist economies. It gives rise to hidden flows not captured in the market-based statistical methodology of national accounts, material products, input-output tables, or social accounting matrices. The present paper provides an operational framework for quantifying the magnitude of these hidden flows and their percolation throughout the economy: Once the price-equivalents of the non-market controls are calculated, a social-accounting-matrix (SAM) framework is used to trace the distribution of the hidden flows to which the non-market constraints give rise among all the institutional actors in the economy. The methodology is illustrated by reference to Yugoslavia as of 1987.

Making the hidden flows explicit reveals the pattern of distortions in incentives facing the actors in the economy. It is a first step in understanding how mixed market-nonmarket economies operate, and where pressures against reform are likely to be strongest. It is thus a necessary preliminary step for designing the sequencing and coordination of reforms and for arriving at correct valuations of firms to be privatized. As a by-product, the quantification of the hidden flows also offers a different approach to purchasing power parity exchange rates for international comparisons of per capita incomes, especially for socialist countries.

The methodology presented in this paper is an extension of that used to quantify rents arising from quantitative restrictions on international trade (Buchanan and Tullock 1965, Baghwati and Srinivasan 1981, and Krueger 1983). It is also an extension of the Little-Mirrelees (1974) project evaluation methodology.

The next section of the paper presents a theoretical, partial-equilibrium, analysis of typical types of distortions prevalent in semi-market and socialist economies. In the third section, we derive numerical, partial-equilibrium, estimates of distortions from trade constraints, domestic non-market price setting, and mixed

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price-quantity constraints in the domestic economy. The following section develops "rent SAMs" to quantify the percolation of these rents through the system of activities and institutions. Section 5 analyses the combined effects of these rents on the national accounts and actual pattern of incentives. Section 6 contains our conclusion.

2. MARKET DISTORTIONS: PRICE CONTROLS AND QUANTITY RATIONING

The main sources of the distortions present in non-market economies are quantity and price controls. Quantity controls are most often used to control imports (through quotas), and less frequently to control exports (through export targets) and set domestic production targets. Investment controls (licencing) and legal monopolies, sustained through control of entry, are additional forms of quantity control.

Quantity controls have a long tradition in centrally planned economies. Physical allocations of resources and production targets to individual enterprises were essentially the only instrument used in crude physical planning. Reformed planning systems, which have come to dominate most Eastern European economies since the mid 1960's, use both quantitative and price instruments to manage semi-or fully-decentralized economies. In both socialist and developing economies the continuation of extensive use of quantity and price controls long after the introduction of market elements is often defended on the following grounds: balance of payments considerations; living standards of the population; economic growth; industrial development strategy; the promotion of regional development; or equity.

Price controls in non-market and mixed economies take a number of forms, ranging from government fixing of nominal prices to controlling only relative prices, by specifying the rate of price change in an inflationary environment. Other price control measures that lie in between these extremes are: controlling trade and sales margins; prescribing mandatory pricing rules; specifying mandatory asset appreciation rates; and fixing minimum depreciation rates.

Most of the goods and services provided by the public sector are subject to rigid price controls. When prices are administratively fixed below market clearing levels, which is most often the case, this implies a subsidy to consumers. In an economic system with broad price controls, all subsidies are in the end passed on to final demand, either through direct and indirect price subsidies, or through excess incomes earned in sectors with more generous price controls. Interest rate controls

are perhaps the only exception to this rule in socialist countries, since low (or negative real) interest rates to state-firms represent a "tax" on the private sector, which has traditionally been a net depositor with the banking system.

Price controls create complex, implicit, tax/subsidy flows in the economy. In addition to direct budgetary subsidies for certain types of subsistence goods, sizeable subsidies also result from other price controls; multi-tier exchange rate controls; overvalued or undervalued exchange rates; inappropriate accounting procedures; and numerous rationing schemes.

2.1 A Taxonomy of Distortions

The subsidies (rents) associated with price controls depend critically on the behavior of the supplying agents and/or on the parallel presence of quantity rationing. Table 1 presents a summary of the theoretical cases together with equations for estimating the implicit consumer and producer subsidies. The corresponding graphs are depicted in figures 1-7.

The case of pure price rationing: If the price is set exogenously through price controls at level P_c, (for symbol definitions see footnote to table 1) and there are no other constraints in the economy, the quantity Q_m supplied by the profit maximizing producer will adjust to Q_s. In other words, it will be determined exclusively by supply considerations. In this case, public sector firms will not be hurt by price controls and can continue to make normal profits albeit at lower capacity utilization rates and lower employment levels.

When the controlled price P_c is lower than the equilibrium price P_e ($P_c<P_e$), as frequently happens, the quantity supplied Q_s is lower than the demanded quantity Q_d, which implies the existence of effective, but implicit, quantity rationing (figure 1). The effectively rationed quantity Q_r is exactly equal to the quantity supplied, and so is the effective supply on the domestic market, Q_m. In this case, $Q_r=Q_m=Q_s$. Since consumers are willing to pay more for the limited quantity of goods available at controlled prices, i.e. the demand price is larger than the market price ($P_d>P_m$), consumer scarcity rents (CSR) are implied. These consumer scarcity rents CSR are defined as the product of the price differential ($P_d - P_m$) with the market quantity Q_m. A black market for the "rationed" commodity is likely to emerge.

When, by contrast, the controlled price is set above the equilibrium price

($P_c>P_e$) the demanded quantity Q_d determines the effective supply on the domestic market ($Q_m=Q_d$) (see figure 2). The potential supply at this price exceeds demand and results in either lower capacity utilization (for nontradables) or additional export supply (for tradeable). Since in this case P_c also exceeds the domestic equivalent of the world price, the additional exports have to be supported by an export subsidy. There is no quantity rationing in this case, and the effective market price equals the demand price ($P_m=P_c=P_d$). There is no consumer scarcity rent, but positive producer rents (PPR) emerge since suppliers would be willing to offer the demanded quantity at a lower price than the exogenously set price (i.e. $P_s<P_m=P_c$).

The case of pure quantity rationing: The case of pure quantity rationing with freely fluctuating prices is even less likely in reality. Quantity rationing exists whenever the quantity supplied is set exogenously ($Q_s=Q_r$). It makes the slope of the supply curve vertical at the point of quantity rationing. The most common case (figure 3), assumes that quantity is rationed below the equilibrium quantity ($Q_r<Qe$). If there are no price controls the effective market price will equal the demand price ($P_m=P_d$), leading to positive producer rents (PPR), but no consumer rents.

If the exogenously determined quantity exceeds the equilibrium quantity ($Q_r>Qe$) and prices are allowed to adjust, negative producer rents (NPR) will be generated (see figure 4). Although this case is not very plausible in the abstract, it is highly relevant in real life situations. Producers finding themselves in this situation will attempt to evade quantity controls by changing the quality of goods supplied, by changing the product mix, or by claiming subsidies to cover their negative producer rents.

In principle, quantity rationing can appear at any level. If the rationed quantity happens to equal the equilibrium quantity ($Q_r=Qe$) and there are no price controls, rationing will not generate any rents at all, since the demand price will also equal all other prices ($P_d=P_s=P_m=P_e$).

The combination of price and quantity rationing: In practice pure price controls or pure quantity rationing rarely exists in socialist economies, particularly in the public sector. Public firms operate under constraints that reflect noneconomic state objectives. Price controls are, thus, often followed by only partial quantity adjustment, which implies the parallel existence of implicit quantity rationing. Public sector "indications", production plans, or targets for firm-production under

controlled prices are forms of quantity rationing. A pragmatic combination of price controls with quantity rationing is common-practice in virtually all real-world situations in socialist countries. We discuss two typical examples.

In the first, the controlled price is set between the supply and demand price ($P_s<P_c<P_d$) and there is quantity rationing. Consumer scarcity rents and positive producer rents exist simultaneously, and price setting can be used for the distribution of the total potential rent between producers and consumers.

In the second, the controlled price is set below both the demand and supply price. This is the most common case in public enterprises. It implies the existence of consumer scarcity rents combined with negative producer rents. Their relative sizes depend on the level of quantity rationing. In the most typical situation (figure 5), $Q_r<Qe$ but above the level of supply that would result from profit maximization under the controlled price regime. With usual demand and supply slopes, the demand price will also exceed the supply price ($P_d>P_s>P_c$) and, consequently, consumer scarcity rents will exceed the negative producer rents. This case generates sizeable consumer scarcity rents, rent-seeking behavior on the part of consumers, and somewhat lower, but still large, negative producer rents (or losses in the public sector).

As the rationed quantity increases, the absolute and relative sizes of scarcity rents fall. When the rationed quantity reaches the equilibrium quantity ($Q_r=Qe$), (figure 6) consumer rents are equalized with negative producer rents. After that point, negative producer rents absorb the majority of the distortion. In the special marginal case, where the rationed quantity is adjusted in such a way that all the demand is satisfied at the prevailing controlled price (and hence $P_c=P_d=P_m$ but $P_c<P_s$), consumer scarcity rents are eliminated and negative producer rents or subsidies to the consumers are maximized (figure 4 with quantity constraint Q_r binding). In many socialist countries, this is the case only with utilities.

Simultaneous distortions in many markets: The analysis presented so far assumes that the supply curve appropriately reflects production costs. In reality, however, numerous factors in socialist countries cause an underestimation of production costs and of supply price. The nominal supply curve is then below the true-cost supply curve. This implies additional consumer subsidies, since it is equivalent to indirect production subsidies. The full subsidies stemming from price control together with quantity rationing in the economy might therefore easily exceed

the direct nominal subsidies described above. The full effective subsidies are influenced not only by other price controls in the system but also by inappropriate accounting practices and by macroeconomic variables, especially exchange and interest rates. Lower applicable exchange rates for public-sector imports of intermediates and capital goods are a typical illustration of underestimation of production costs. Their exisatence, in turn, affects the cost structure of public enterprises and misguides price determination procedures.

With implicit distortions of this type, it would be quite possible, for example, that even in cases where the quantity supplied was allowed to adjust so as to eliminate nominal losses to public enterprises, real losses would still exist. The most frequent case observed under non-market price or quantity determination (figure 8) includes a combination of all of 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.

To summarize, positive consumer scarcity rents will always exist when the demand price is greater then the effective market price ($P_d > P_m$) irrespective of how the market price is determined. CSR can exist in cases of pure price rationing or in cases of combined price and quantity rationing. CSR cannot be negative since consumers can not be "driven away" from their demand curves. CSR will always be eliminated in equilibrium situations generated either by market forces (where $P_e=P_m=P_s=P_d$) or by ideally conceived price controls ($P_c=P_m=P_e=P_s=P_d$). Furthermore, scarcity rents will disappear even in imperfect situations with quantity rationing, if prices are allowed to adjust to clear the market ($P_m=P_d$).

Producer rents exist whenever the effective price on the market differs from the supply price. This can happen in cases of pure price rationing at levels above equilibrium price, cases of pure quantity rationing, and any combination of the two.

Nonmarket controls lead to a combination of large deficits in public enterprises with commodity shortages at regulated prices. Reported nominal losses by public enterprises in many socialist and developing countries indicate that controlled prices often lag considerably behind market clearing prices and that public

enterprises have not been allowed to adjust their supply accordingly . There is also a publicly perceived lack of goods on the market (of course, at the going, extremely low, controlled prices). These apparent shortages are more an indication of the size of present distortions than a relevant claim for increasing rationed quantities. Increasing rationed quantities under rigidly controlled prices would only imply growing negative producer rents (i.e. subsidies) and losses in public enterprises.

3. QUANTIFYING THE DISTORTIONS

The accounting flows measured in non-market economies capture only the rectangle circumscribed by the observed market price and the observed quantity sold. But in non-market economies, the observed prices and quantities are very poor indications of the real values and costs of the commodities exchanged in the market. Price or quantity controls give rise to hidden flows represented in the discussion of the previous section by the consumer scarcity rents and the producer rents in figures 1-7. These hidden flows must be added to the flows captured by existing statistics in order to obtain an adequate 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, since, when buying or selling a particular product, both producers and consumers exchanging a given product receive rents arising from incorrect prices not only in the sector producing the commodity exchanged but also in input-producing sectors and in the macro-economy. To see the real extent to which particular activities or enterprises are taxed or subsidized, one must capture the direct and indirect percolation of rents throughout the system.

We proceed in two steps. First, we estimate the direct price-equivalents of the quantity and price controls in each sector and compute the partial equilibrium rents to each activity by applying the difference between the price-equivalent of the control and the market price to the base quantitites in the SAM. Second, we use the information contained in the SAM to evaluate the direct and indirect rents received by each activity and to distribute these rents to factors; enterprises and households; and between current consumption, investment and the public deficit.

The present section describes how we estimated the partial equilibrium

price equivalents of the rents arising from each of these sources of distortion in each sector of the Yugoslav economy as of 1987.

3.1. Import Quotas

In Yugoslavia, the strong trade liberalization drive of the late 1970's was reversed after disappointing trade deficits materialized in 1979-1981. The debt crisis of 1982 ushered in a restrictive trade regime with an elaborate system of import controls. Even though this system was relaxed after 1984, import controls were still substantial in 1987. Established classes of imports were: unrestricted imports, "conditionally liberal" imports, and imports subject to value or quantity quotas. Our quantification of import restrictions reflects only value or quantity quotas.

As in all East European countries, Yugoslav foreign trade must be disaggregated into "clearing" and "convertible" currency trade, since quantitative controls differ as among these two types of trade. With some exceptions, "clearing trade" is primarily with Committee for Mutual Economic Cooperation (COMECON) member countries. In 1987 clearing trade was 22.7% of total imports, and 20.4% of exports. Due to institutional changes in Eastern Europe clearing trade is currently being phased out.

Our information on import quotas came from a list of restricted imports published by the Yugoslav government, using the six-digit Brussels tariff classification of commodities. Starting from this initial list of more than 460 commodities subject to quantity controls, we first eliminated all commodities for which the quotas in 1987 were not binding by comparing real 1987 imports with real 1979/1980 imports, commodity by commodity. (During 1979/80 import restrictions were quite liberal and gross output was about the same as in 1987.) The ratios of 1987 imports to 1979/80 imports were then aggregated to the sectoral level using domestic absorption weights. This procedure was followed for the eight commodity-importing sectors of the SAM. For transportation and other productive services import quotas were deduced from existing restrictions on travel and shipping.

Most of the official data sources on import restrictions refer to convertible currency imports. However, since clearing trade is based on state-agreed commodity lists, it is by definition subject to rigid administrative controls, often equivalent to combined quantity and value controls. Nevertheless, these imports do not appear in

the regular import quotas, even though the rigidity of clearing imports has often resulted in more severe controls than those stemming from standard quotas on convertible imports. For standard commodities (like crude oil), physical limits from "commodity lists" were considered to be quotas. For differentiated commodities, where import rigidities stemmed from the inability of clearing-market countries to supply the types of commodities needed domestically, the actual quantities of imports were used as quotas.

Once sectoral import-quantity restrictions were quantified (see table 2) the import-price and value-equivalents (or rents) stemming from these import controls had to be estimated. We used the properties of the import demand functions for this purpose (see figure 8). When import quotas are binding, the quantity of imports cannot adjust to the demanded level QMd and clear the market. This makes the demand price PMd greater than the supply price PMs. To calculate by how much PM_d exceeds PM_s at the import quota set at QM_r, we need to know the excess demand (QM_d-QM_r) at the supply price PM_s and the import demand arc elasticity η_m at QM_d. Specifically, $PM_d = PM_s \cdot ((QM_d-QM_r)/(QM_r \cdot \eta_m)+1)$. At that price, the consumer scarcity rent is equal to $(PM_d-PM_s) \cdot QM_r$. The own-price import-demand elasticities were estimated by regressions, using data from 1972 to 1987. Our estimates indicate that the rent equivalent of quotas ranged from 10% to 66% of the value of sectoral imports. Rents for convertible trade averaged 25.9% and for clearing trade 23.8%.

3.2. Domestic price controls with full supply adjustment

During the "central planning" phase, almost all prices were completely controlled by the state. Most subsequent reforms entailed simultaneous decentralization, introduction of market mechanisms (for commodities but not factors), and price liberalization. Nevertheless, in 1987 there were still substantial price controls. The reasons were many:

First, the removal of strict state control of prices did not always translate into free market prices. The initial price liberalization wave, which occurred as early as 1952 in Yugoslavia and in the 1960's in other socialist countries, was primarily intended for final industrial goods (sheltered by import protection); for other goods it merely meant a transition from state controlled prices to other price control mechanisms. Price controls were retained for some intermediates (agricultural goods,

energy, iron and steel), transportation, and basic consumer goods in order to increase the competitiveness of input-using sectors, generate a modern industrial base and improve standards of living.

Second, price liberalization for some basic intermediates and consumer goods was continuously postponed in order to avoid riots and contain the main perceived inflationary threat. When the gap between controlled and free prices widened, pressures from producers would build up and, eventually, controlled prices would be adjusted upwards. That would trigger a round of income and price changes and the cycle would end at essentially the same relative prices from which it started.

Third, as these cycles continued and led to accelerated inflation, the state extended price controls to goods with previously decontrolled prices. The specific form of price controls was often innovative: price forming rules; allowed rate of price change pegged to the past inflation rate through an indexation formula; new legal instruments introduced by the macroeconomic self-management of the mid-1970's, etc. Producer associations, consumer groups, and regional governments were all involved in this drive towards conquering inflation through "soft" price controls.

These "soft" price controls closely followed the "stop-go" macroeconomic policies of the government in the late 1970's and early 1980's and in 1987 were wider in coverage the rigid state price setting. A particularly strong surge in "soft" price controls coincided with the foreign debt crisis of 1982. Import quotas and devaluation were accompanied by extensive domestic price controls aimed at stopping inflationary pressures and preventing the impact of devaluation on domestic prices. It became obvious that this was a futile effort as the "stop-go" macroeconomic and price control policies continued. Price controls only succeeded in introducing ratchet effects into the inflationary spiral whenever controls were lifted, while, paradoxically, generating inflationary expectations. In 1986, the newly installed government of Mikulic considerably liberalized price controls, but reversed its policies in 1987, when faced with the prospect of three-digit inflation. The year portrayed in the base SAM data was, therefore, characterized by widespread price controls.

The effect of price controls on individual sectors was estimated either by relying on recent sectoral studies or on direct product-price comparisons (for details see last column of table 3). Product price comparisons used "landed world-prices" as a banchmark and were based on small, representative commodity samples.

Production weights were used to aggregate commodity distortions to the sectoral level. Implied rents stemming from price controls ranged from 10% to 25% and averaged 11.4% of domestic absorption, 26.1% of GDP, and 11.7% of gross output.

3.3. Domestic price controls with constrained supply adjustment.

Three types of quantity constraints accompany price controls in socialist economies.

1. The government sets exogenous hard quantity constraints - this is rarely the case in Yugoslavia, except for utilities, but frequently occurs in other socialist economies;

2. "Self-imposed" quantity constraints are negotiated between the producers and the government or some parastatal institutions. In return, producers are rewarded with preferential access to rationed goods or licensed rights. Self-imposed constraint sometimes occurs even without formal negotiations reflecting the dual nature of the Yugoslav socialist self-managed firm, as both a business enterprise and a social institution.

3. Controls on investment and frequent price control changes give rise to constraints on quantity adjustment. In socialist economies microeconomic responses to price control changes are constrained by prior quantity controls on investment. Most of the present production capacity in large social firms is technologically outdated and was designed for considerably higher output levels. Adjustment problems in semi-regulated economies are also compounded by the frequency of change in the "soft" price constraints, and the subtle nature of these constraints.

Constrained quantity responses give rise to negative producer rents which, in turn, lower the rates of return on capital. In Yugoslavia, quantity constraints, mostly of the "soft" type, coexist with "soft" price constraints. The soft quantity constraints are hard to detect, especially since they are often negotiated. Sectors with quantity constraints combined with price controls were identified through the coexistence of three features: (1) the 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) the 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) the provision of continual subsidies to cover persistent

losses. These sectors thus combine rates of return below the opportunity cost of capital, negative producer rents, and capital subsidies.

To quantify capital subsidies, we need a measure of the opportunity cost of social capital. The average interest rate on Yugoslavia's foreign debt in 1987 (10.3%) was used for this purpose. The high level of Yugoslav international debt (over $20 billion), entirely public or publicly guaranteed, makes repayment of foreign debt an obvious social investment alternative. The cost of foreign debt is therefore an obvious measure of the opportunity cost of social capital. The negative producer rents are computed by multiplying the sectoral capital stock by the difference between the actual rate of return on capital and the rate of interest on foreign debt. We must, however, postpone this calculation until capital stock and gross profits can be evaluated at correct rather than distorted prices. (See section 4.3 below.)

4. ECONOMY-WIDE ALLOCATION OF DISTORTIONS

The present section allocates the benefits and costs of the distortions among activities and institutions, using the SAM framework. Each of the distortions gives rise to a set of interconnected flows that are portrayed in "rent SAMs" due to that particular distortion. The rent SAMs indicate the changes in flows arising from specific distortions. These changes in flows are merely accounting concepts and do not reflect optimizing behavior by decision-making institutions consequent upon reflecting these distortions in the basic economic flows.

The base SAM for Yugoslavia as of 1987 is presented in table 4. It summarizes the accounting flows measured in distorted prices and at market (free or controlled) quantities. The rent SAMs must be added to the base SAM to correctly reflect the values of transactions arising from non-market controls.

4.1 Import Quantity Controls

The rent flows arising from binding import quotas are presented in the SAM of table 5. This SAM was obtained by using the price-equivalents of the import-quantity controls computed for each sector in table 2 of section 3.1, 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. For each activity row, the sum of

consumer rents from imports is the product of the exogenously set import quantity QM_r and the price differential (PM_d-PM_e). In table 5 this total sectoral import rent is then allocated to intermediate and final demand deliveries in proportion to import shares in total supply on the domestic market. Paradoxically, 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, and in the value of final consumption, 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. We reflect this fact, by adding to the wages of each labor skill the increased value of the re-priced import component of their consumption bundle. Workers capture this rent one way or another, either through rent-seeking activities, involving bartering scarce imports, or through official wage adjustments.

We assume 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 capital-row of the import-rent SAM of table 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 consumption rents from imports. 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 imports give rise to rents throughout the rest of the system. Were import rents to be included in this row, it would imply that the import rents accrue to the rest of the world. Since imports are valued at world prices in domestic

currency in the base SAM, and since we assume that their supply is perfectly elastic, the entries for imports in the base SAM already reflect the full payment for imports to the rest of the world. This assumes that there are no changes in the exchange rate, in actual imports, or in sectoral trade balances. This assumption is appropriate since our import-rent SAM is merely an accounting concept and does not reflect behavioral adjustment by decision-making units.

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 would increase apparent inequality slightly. Import rents augment rural household incomes by 1%; mixed household incomes by 1.3%; and urban household incomes by 1.6%. 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.

4.2 Pure Price Distortions on Domestic Markets.

The rent flows arising from the "soft", but pervasive, domestic price controls in Yugoslavia as of 1987 are portrayed in the SAM of table 6. This SAM was obtained by calculating the changes in flows arising from the sectoral price distortions in domestic prices quantified in table 3 of section 3.2.

We start by re-pricing all the flows in the activity-rows of the base SAM at their landed-world-market-equivalent prices. This leads to changes in the values of intermediate expenditures in each sector; to changes in the values of consumption expenditures by households and government; and to adjustments in the values of inventories and investment expenditures of each sector. Exports (and imports) were not re-priced, since, in the base SAM, they are already valued at world prices in domestic currency. This assumes that the repricing of domestic goods was done at the existing nominal exchange rate and with unchanged sectoral real trade balances.

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 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 assumed that profits absorb the effects of the re-pricing of all of these flows. They are 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 "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.

4.3 Negative Producer Rents on Domestic Markets

In section 3.3, we showed that constraints on supply responses give rise to negative producer rents and postponed calculation of rates of return. Adjustments in the SAM flows for import-quantity constraints (table 5) and domestic price controls (table 6) have affected gross profits, the cost of investment goods by sector of destination, and, implicitly, the valuation of the capital stock. In table 7, we calculate the rates of return and the negative producer rents.

Table 7 indicates that the apparent pattern of negative producer rents that emerges is consistent with the socialist mode of industrial development. In this mode of development, sectors that supply intermediates, investment goods, and "basic needs" products have negative producer rents which are passed on in the form of consumer rents to priority sectors and households. On the average, the sum of these negative producer rents is 1.2% of the present capital stock and 12% of gross profits.

The results in column (9) indicate the existence of sizeable negative producer rents in agriculture, other industries, and transportation, and very low negative producer rents in iron and steel. Columns (3) and (9) of table 7 indicate the negative producer rents at distorted market prices and corrtected prices respectively. Comparison of the results of these two columns indicates that with correct prices the pattern of biases associated with socialist industrial development is partly lost, and the pattern commonly observed in developing countries emerges. This suggests that public policy in Yugoslavia has been partially misled by looking at rates of return based on distorted market prices.

Correcting for price distortions and trade constraints entirely eliminates negative producer rents in energy and construction, 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 contrast in "other industries" price adjustments transform negligible negative producer rents (0.7% of the capital stock at the distorted prices) into the largest negative producer rent rates (5.8% of adjusted capital stock). This heterogenous sector consists of a number of small and very flexible industries that have weak bargaining power, and survive by quickly adapting to the environment. Repricing with quantities unchanged, as we do here, hurts "other industries" most by charging them demand prices for their inputs and outputs without simultaneously allowing for

quantity adjustments (particularly capacity utilization).

Indications of inefficient capital use persist in agriculture, iron and steel, and transportation. The major cause of higher negative producer rents in agriculture after price corrections is heavy use of underpriced machinery. The negative producer rents in agriculture would have been even bigger if the land had been valued at market-clearing prices.

In iron and steel, negative producer rents are almost eliminated by the price adjustments. However, most of the positive rents accruing to this sector are due to implicit investment subsidies rather than to adjustments in operating costs. This explains the tendency of the sector to continuously embark on new investment projects even though it operates at very low capacity levels. Finally, the negative producer rents in the transportation result from the fact that this sector is burdened with a huge urban and inter-city public transportation system, which has a commitment to maintain non-profitable lines, and with an inefficient railway system that is "charged" with the capital cost of its infrastructure.

Table 8 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. For example, returns to agriculture would have to be 928 billion Dinars higher to reflect the true opportunity cost of capital. We then adopt the realistic assumption, 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. One of the most important rationales for introducing enterprise associations (so called "complex organizations of associated labor") and bank associations (so called "associated banks") was to facilitate the capital subsidy flows stemming from negative producer rents.

However, in absorbing the estimated 2/3 of the negative producer rents, government was partially acting merely as an intermediary for redistribution between well-off and worse-off companies. We estimate that roughly 50% of negative producer rents assigned to the government in activity columns was ultimately borne by the government (decline in government savings by 682 billion Dinars). 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 was 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.

5. COMBINED ADJUSTMENTS

Table 9 presents the SAM incorporating all the rent adjustments arising from import quotas, domestic price adjustments, and combined price-quantity controls. For brevity, we shall refer to this SAM as the "adjusted-SAM."

5.1 Comparison of SAMs

Comparison of the adjusted SAM of table 9 with the original SAM of table 4 indicates that:

First, the accounting 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 change since the price 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. Adjustments

for trade distortions are relatively small. As in most socialist countries, the major sources of domestic price distortions are in domestic prices.

Third, there is a large dispersion in the distribution of rents among sectors. The activities with the highest overall rents are non-productive services (24.9%), other productive services (19.4%), iron and steel (19.7%) and chemicals (17.1%). The activities with the lowest rents are other industries (1.4%), textiles (3.4%), and metals (4.4%). The rents in the other sectors are mostly around 10%.

Fourth, Yugoslavia as of 1987 does not appear to be a case of distortions whose general equilibrium effect is different from their partial equilibrium effect. Indeed, the pattern of distortions arising from trade restrictions and the pattern arising from domestic controls seem to reinforce, rather than cancel, each other. Nor do the distortions appear to be haphazard. On the contrary, the pattern of 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 the reach of most households. (This, of course, is not to say that the distortions are optimally chosen to accomplish the state's objectives, from either economy-wide or regional perspectives. Nor do we imply that the policy of using distorted prices to foster social policy is a good one).

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. Subsidies to input industries are 2.15 times subsidies to modern industries, when agriculture is excluded from input industries, and 2.68 times larger, when agriculture is included. A policy of correct output prices for basic industries coupled with production subsidies to "modern" industries would have been more efficient, in the sense of requiring less rents. Of course, such a policy would have overtly countervened GATT regulations!

Sixth, on the "basic needs" side, the rents to consumers are of the order of 12% of the consumption basket.[1] 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

rents are more than 5.5 times bigger than consumer rents. Even the pure fiscal costs have a benefit-cost ratio that is smaller than unity. Additional costs on the fiscal side arise from having a smaller tax base for both value added and sales taxes, and from government subsidies, both directly and through the banking system. These combined fiscal costs exceed the value of consumer rents by 15%. A policy of pricing consumer goods and services correctly and then using lump sum subsidies to households would have been 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, net subsidies 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 investment, net and gross subsidies are the same.) For all goods and services, net subsidies are -5831 billion Dinars while subsidies through investment are 1080 billion Dinars. There are intersectoral variations, however: In basic industries, the ratio of net intermediate subsidies to investment subsidies are -7.2; in modern industries, the ratio is +6.5; while in services, the ratio is -7.4. If one computes subsidies to consumption by taking the share of deliveries of consumer goods in all sectors, net subsidies to consumption are still negative (-984) and their ratio to investment subsidies is -5.1. Thus, investment subsidies compensate for only about 20% of production losses on consumer goods, due to lower prices of inputs and outputs. An equivalent computation for exports yields lower negative subsidies (-300) and a somewhat lower positive ratio to investment subsidies (-4.2). Investment subsidies compensate for 25% of export-production losses. There is thus some slight pro-export bias in the pattern of sectoral subsidies.

Eighth, in the first instance, profit rates bear the brunt of the distortions introduced by the existing non-market pricing and quantity constraints in the system. The ratio of rents to base flows is the largest in the capital-row of the adjusted SAM. The dispersion in the ratio of rents to base flows is also the biggest. Rents concealed in rates of return to capital vary from +126% of profits in non-productive services to -22% in metals. Seven sectors have positive producer-rents in excess of 50% (agriculture 76%; energy 51%; iron and steel 59%; chemicals 62%; construction 66%; other productive services 87%; and non-productive services 126%) and only two

sectors (metals and textiles -22%) have negative producer rents. Clearly, the apparent rates of return are very unreliable indicators of true profitability.

Ninth, unlike 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, and 6.1% of total distortions in prices and for 14.2% of the 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 86% 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, relative subsidies through rents are different from relative overt subsidies. It is, thus, easy to over or under-subsidize a particular sector or institution.

5.2 Comparison of Macro Aggregates.

Table 10 provides a comparison of GDP and its components derived from the adjusted and the base SAMs. The macro aggregates are all bigger with prices that reflect the existing major distortions. Adjusted GDP at factor costs is 14.8% higher than in the 1987 base. Adjusted gross output and GDP at market prices are 13.7% larger. Adjusted consumption is 16% above the base and household incomes are 9% greater. Even though adjusted investment is 10% higher than in the base, the share of investment in adjusted GDP is 3% smaller. Finally, since the values of exports and imports are unchanged, trade represents a smaller share of GDP than in the base, and absorption goes up less than gross output.

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. Capital income is 40% larger at correct prices than at base prices.

There are also major changes in the government accounts; government expenditures are 14.8% higher at corrected prices and government savings are 22% less. Revealing the hidden capital subsidies does not change the magnitude of the overall subsidy flows, since these merely represent a reshuffling of subsidy flows among enterprises and between enterprises and the government.

At adjusted prices, the real exchange rate is 11% lower and the domestic

price level, using domestic absorption, is 12.6% higher. Our analysis suggests that the purchasing power parity exchange rate, excluding adjustment for the imputed value of housing rents, was between 10% and 13% above the average official covertible exchange rate in 1987. Interestingly enough, the premium on hard currencies in the large informal private foreign exchange market in 1987 was remarkably close to that level.

5.3 Comparison of Multiplier Matrices

We computed four multiplier matrices with the original and adjusted SAMs: one with the two trade accounts exogenous; one with the investment account exogenous; one with the three government accounts exogenous; and one with all six of the accounts exogenous. To compare these multiplier matrices, we then computed the eigenvalues and eigenvectors of each multiplier matrix. The eigenvalues are an indication of the average magnitude of the multiplier effects and of the dynamic properties of the system under shock. The eigenvectors are an indication of the incidence of the multipliers among accounts.

We found very little difference in multiplier effects. The eigenvalues are slightly larger for the adjusted SAM, indicating somewhat larger ultimate displacement of the asymptotic trajectory under exogenous shocks. But the difference is small. Except for the eigenvalue of the matrix applicable to trade experiments, which is 13% larger, the ratio of the largest eigenvalue of the adjusted SAM to that of the original SAM is only about 1% higher. The eigenvectors applicable to the two largest roots of the multiplier matrices are all very similar, and differ mostly in the third decimal place. On the average, the ratio of the eigenvector coefficients is about 2-3% lower for the adjusted SAM matrix than for the original matrix.

The comparison of multipliers thus suggests that the existence of distortions due to price and quantity constraints would not affect the conclusions one would draw from a mechanical application of a constant-price, infinitely elastic supply, SAM-based model of the economy.

6. CONCLUSIONS

Accounting systems are intended as tools of economic analysis and guides to policy formulation. Our contention is that in semi-market and socialist economies

accounts based on market flows and market prices conceal some important underlying realities. Accounting systems that properly account for the existing distortions and their incidence among institutions and sectors offer better economic tools for policy analysis. The major thrust of our approach is that accurate diagnostics should precede introduction of reform. This paper deals with developing better tools for accurate diagnostics.

We have illustrated the feasibility of constructing such an accounting system for Yugoslavia as of 1987. The application to Yugoslavia is intended as a conceptual guide and feasibility study. It illustrates the relative orders of magnitude of distortions arising from different sources and their incidence. Our procedures should not be replicated mechanically, however. As indicated in the discussion of section 4, specific features of the Yugoslav institutional structure guided specific accounting decisions made in the construction of the "rent" SAMs at many points in the analysis. Many of these institutional realities are common to most socialist countries, but others are not. As to orders of magnitude, Yugoslavia has been evolving towards a decentralized market system for the last quarter of a century. It has benefitted from a succession of experiments with market-socialism. Despite obvious institutional and functional shortcomings, these experiments have provided important interim steps towards the establishment of a full market economy. The result is that Yugoslavia as of 1987 is one of the least economically distorted socialist countries. In most other socialist countries, we would expect the order of magnitude of absolute distortions to be substantially larger. Depending on the relative degree of openness of the economy, the relationship between distortions arising from international trade and distortions in the domestic economy might also differ.

By way of caveat, it should be noted that the present study did not include distortions through asset prices. In addition to housing, already mentioned in an earlier footnote, major distortions can also be found in the valuation of other assets. As a general rule, all non-reproducible assets (particularly land) are heavily undervalued in all socialist countries, in line with the "labor-theory of value". The true (or market) valuation of equipment, buildings and financial assets (claims) could substantially modify the rent analysis applied to flows contained in this paper.

Our analysis of the distortions to measured flows 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 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 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 any 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. Non-convergence created a gap which, up until 1988, was 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, leading to a breakdown of the bargaining

system. Furthermore, our analysis of distortions suggests that the biases imparted by the system of hidden rents do 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 5 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 rent rectangles promote? The present analysis does not yet permit us to answer this question. In this paper, we did not attempt to carry out a "what if" behavioral analysis tracing how institutions would adapt their decisions were the corrected prices to become market prices. To do so properly, requires the use of a price-sensitive behavioral model. This we do in another paper in which the SAM of table 10, with flows corrected for rents, is used as an input to a CGE model. In the meanwhile, we hope to have convinced the reader of the usefulness and feasibility of the present accounting exercise.

References:

Baghwati, J.N. and T.N. Srnivasan (1981) "The evaluation of projects at world prices under trade distortions: Quantitative restrictions, monopoly power in trade and non-traded goods", International Economic Review, **22**, p. 385.

Buchanan J.M. and G. Tullock (1965) The Calculus of Consent, University of Michigan Press, Ann Arbor.

Kruger A.O. (1983) Alternative Trade Strategies and Employment: Synthesis and Conclusions, University of Chicago Press, Chicago.

Little I.M.D. and J.A. Mirrlees (1974) Project Appraisal and Planning for Developing Countries, Heinemann, London.

Footnotes:

1. 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.

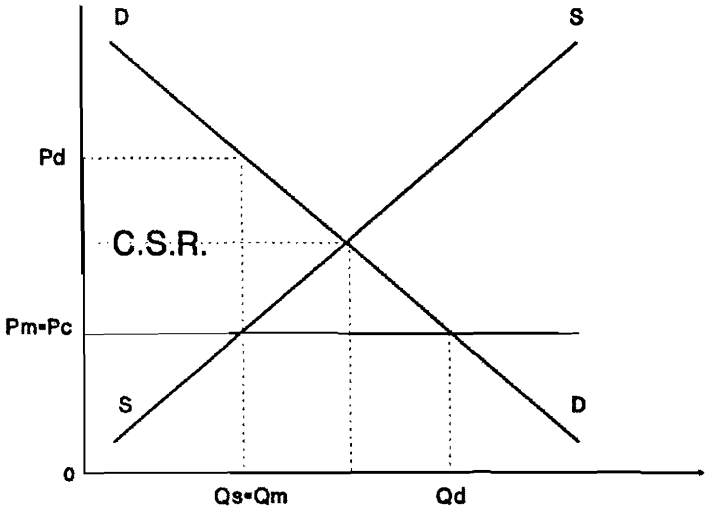

Figure 1: Pure Price Rationing - Case 1

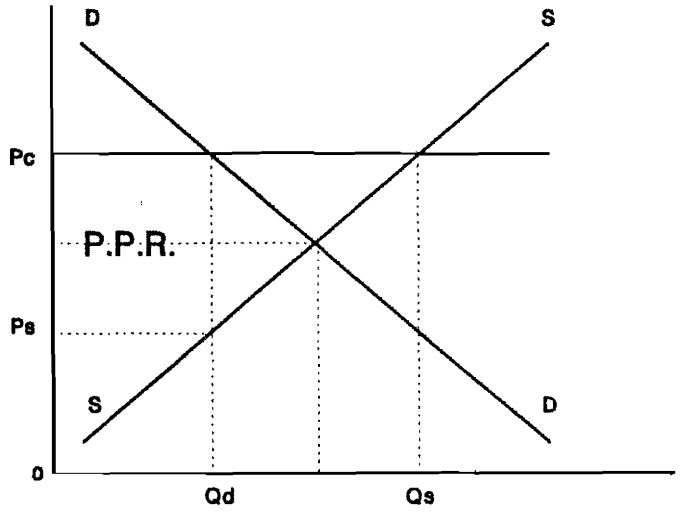

Figure 2: Pure Price Rationing - Case 2

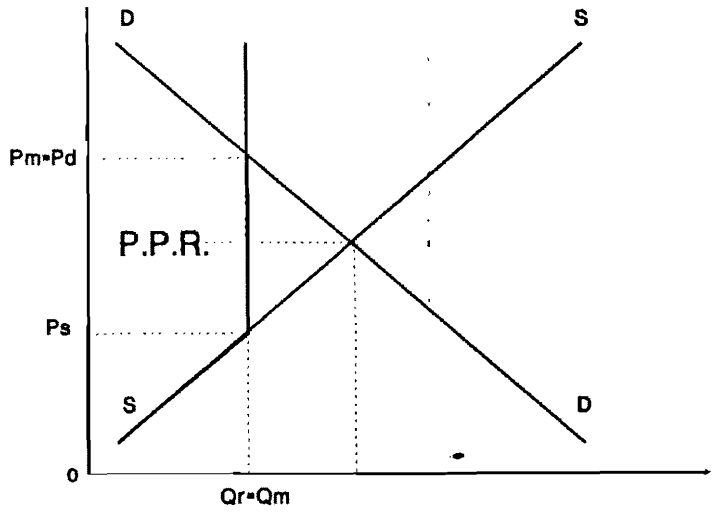

Figure 3:Pure Quantity Rationing- Case 3

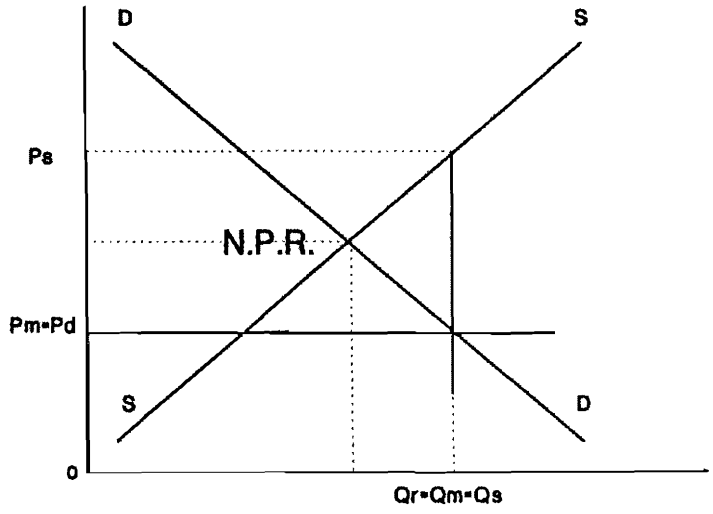

Figure 4:Pure Quantity Rationing- Case 4

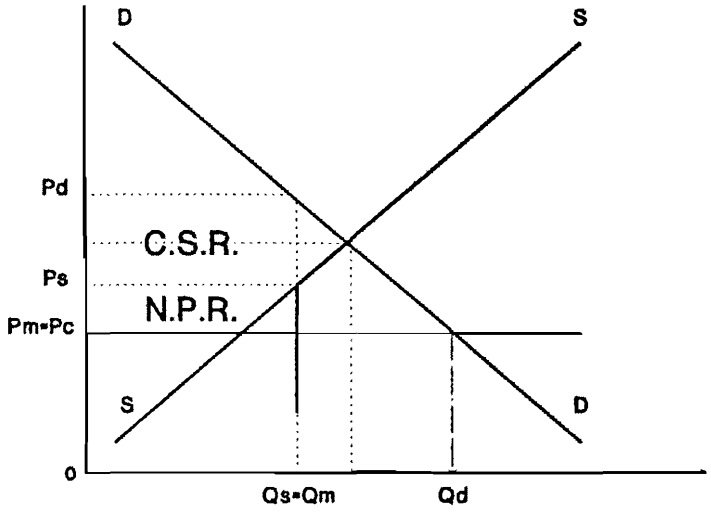

Figure 5:Price/Quantity Rationing-Case 5

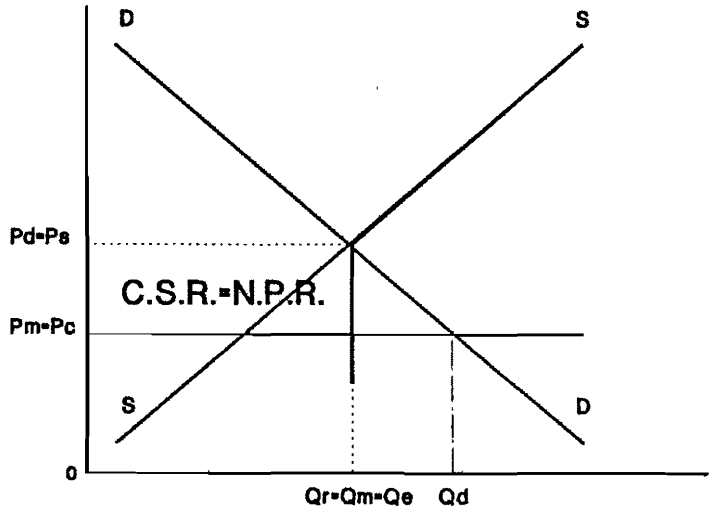

Figure 6:Price/Quantity Rationing-Case 6

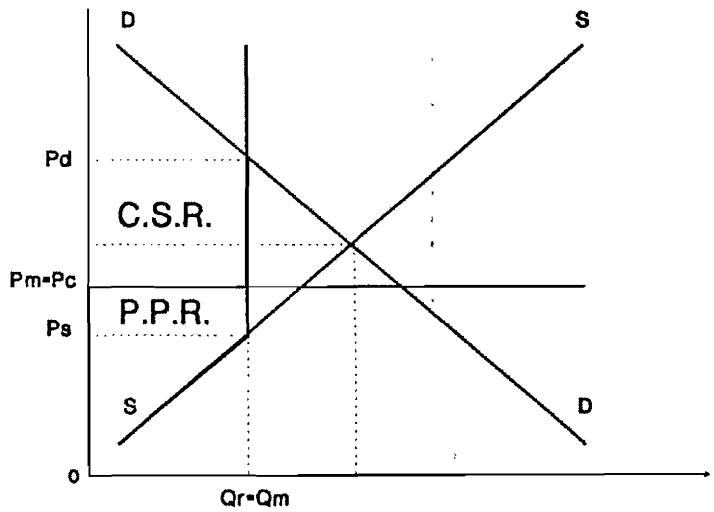

Figure 7:Price/Quantity Rationing-Case 7

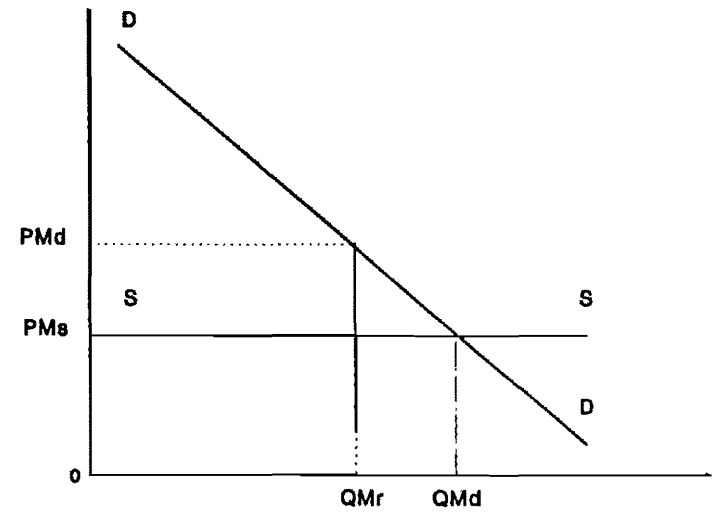

Figure 8: Import Quantity Rationing

Table 1: Typical Cases of Price and Quantity Controls

		CSR	PR	Market Prices	Market Quantity	Excess Demand
Case 1	Pure Price Rationing $P_c<P_e<P_d$	$(P_d-P_m)Q_m>0$	$(P_m-P_s)Q_m=0$	$P_m=P_c=P_s$ $P_m<P_d$	$Q_m=Q_s=Q_r$	$Q_d-Q_e>0$
Case 2	Pure Price Rationing $P_c=P_d>P_e>P_s$	$(P_d-P_m)Q_m=0$	$(P_m-P_s)Q_m>0$	$P_m=P_c=P_d$	$Q_m=Q_d=Q_s$	$Q_d-Q_s=0$
Case 3	Pure Quantity Rationing $Q_r=Q_s=Q_m<Q_e$	$(P_d-P_m)Q_m=0$	$(P_m-P_s)Q_m>0$	$P_m=P_d$	$Q_m=Q_r$	$Q_d-Q_s=0$
Case 4	Pure Quantity Rationing $Q_r=Q_s=Q_m>Q_e$	$(P_d-P_m)Q_m=0$	$(P_m-P_s)Q_m<0$	$P_m=P_d$	$Q_m=Q_r$	$Q_d-Q_s=0$
Case 5	Price and Quantity Rationing $P_c<P_s<P_e<P_d$ $Q_r=Q_s=Q_m<Q_e$	$(P_d-P_m)Q_m>0$	$(P_m-P_s)Q_m<0$	$P_m=P_c$ $P_m<P_d$	$Q_m=Q_r$	$Q_d-Q_s>0$
Case 6	Price and Quantity Rationing $P_c<P_s=P_e=P_d$ $Q_r=Q_s=Q_m=Q_e$	$(P_d-P_m)Q_m>0$	$(P_m-P_s)Q_m<0$	$P_m=P_c$ $P_m<P_d$	$Q_m=Q_r=Q_s$	$Q_d-Q_s>0$
Case 7	Price and Quantity Rationing $P_s<P_c<P_e<P_d$ $Q_r=Q_s=Q_m<Q_e$	$(P_d-P_m)Q_m>0$	$(P_m-P_s)Q_m>0$	$P_m=P_c$ $P_m<P_d$	$Q_m=Q_r=Q_s$	$Q_d-Q_s>0$

Symbols have the following meaning:
Q_e P_e - Equilibrium quantity and price;
Q_s P_s - Supply quantity and price;
Q_d P_d - Demand quantity and price;
Q_m P_m - Effective market quantity and price;
P_c - Controlled price;
Q_r - Rationed quantity.

Graphic illustrations are presented in figures 1 - 7.

Table 2: Binding Import Quotas

Sectors[1]	Structure of Imports in % CONVT[2]	CLEAR[2]	Effective Import Quotas (EMQ)[3] CONVT	CLEAR	Import Demand Elasticities CONVT	CLEAR	Import Price/Value Equivalent of Quotas[3] CONVT	CLEAR
AGRI	85.5%	14.5%	18.3%	18.3%	0.6	1.2	30.5%	15.3%
ENER	43.8%	56.2%	30.4%	30.4%	1.0	1.0	30.4%	30.4%
IRON	56.8%	43.2%	18.3%	13.0%	1.1	1.3	16.6%	10.0%
META	84.9%	15.1%	22.4%	27.1%	0.9	1.2	24.9%	22.6%
CHEM	78.6%	21.4%	26.4%	25.7%	1.0	1.3	26.4%	19.8%
TEXT	77.7%	22.3%	59.9%	39.9%	0.9	0.8	66.6%	49.9%
FOOD	93.0%	7.0%	35.8%	8.2%	0.7	0.8	51.2%	10.2%
OTIN	78.4%	21.6%	25.0%	15.0%	1.0	1.0	25.0%	15.0%
CNST	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
TRAN	86.2%	13.8%	25.0%	25.0%	1.0	1.0	25.0%	25.0%
OPSE	96.0%	4.0%	10.0%	15.0%	1.0	1.0	10.0%	15.0%
NPSE	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.

[1] Sector acronyms are: AGRI=Agriculture; ENER=Energy; IRON=Iron and Steel; META=Metals and Metal Based Industries; CHEM=Chemicals; TEXT=Textiles; FOOD=Food and Beverages; OTIN=Other Manufacturing Industries; CNST=Construction; TRAN=Transportation and Communications; OPSE=Other Productive Services; NPSE=Non-Productive Services.

[2] CONVT = Convertible Currency Area; CLEAR = Clearing Currency Area.

[3] Effective import quotas (EMQ) are defined as a relative (percent) difference between the quantity of existing restricted imports (QMr) and the demanded quantity of imports (QMd) given the demand and supply conditions on that market. For method of calculating EMQ see text.

Table 3: Domestic Price Controls

Sectors[1]	Domestic Price Controls P_d/P_c-1	Implied Rents as % of Domestic Sales	Implied Rents as % of Gross Output	Source of Estimated Effect of Price Controls
AGRI	10.0%	10.0%	9.7%	Commodity Price Comparisons (Sample=10)
ENER	19.6%	19.6%	18.6%	Commodity Price Comparisons (Sample=4)
IRON	25.0%	25.0%	20.7%	Iron Sector Study
META	n.a.	n.a.	n.a.	Not Estimated - Market Clearing Prices
CHEM	20.0%	20.0%	16.6%	Chemical Sector Review
TEXT	n.a.	n.a.	n.a.	Not Estimated - Market Clearing Prices
FOOD	10.0%	10.0%	9.5%	Commodity Price Comparisons (Sample=20)
OTIN	n.a.	n.a.	n.a.	Not Estimated - Market Clearing Prices
CNST	15.0%	15.0%	14.0%	Commodity Price Comparisons (Sample=3)
TRAN	10.0%	10.0%	8.5%	Commodity Price Comparisons (Sample=6)
OPSE	25.0%	25.0%	20.8%	Service Price Comparisons (Sample=4)
NPSE	25.0%	25.0%	25.0%	Estimated Service Price Comparisons
Total	13.2%	11.7%		

[1] For sector acronyms see footnote 1 in table 2.

Table 4: 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	

Table 4-a: Investment Matrix for Base 1987 SAM

	IAGRI	IENER	IIRON	IMETA	ICHEM	ITEXT	IFOOD	IOTIN	ICNST	ITRAN	IOPSE	INPSE	IDST	TOTAL
IAGRI	77	0	0	0	0	0	0	0	0	0	0	0	760	837
IENER	0	0	0	0	0	0	0	0	0	0	0	0	65	65
IIRON	0	0	0	0	0	0	0	0	0	0	0	0	593	593
IMETA	389	586	369	424	221	216	157	188	178	749	402	255	2987	7121
ICHEM	0	0	0	0	0	0	0	0	0	0	0	0	731	731
ITEXT	0	0	0	0	0	0	0	0	0	1	0	0	1211	1213
IFOOD	0	0	0	0	0	0	0	0	0	0	0	0	977	977
IOTIN	7	9	6	6	3	3	2	3	3	12	6	5	751	817
ICNST	276	404	178	222	65	125	92	85	37	583	595	2235	146	5043
ITRAN	37	47	29	34	17	17	13	15	14	61	33	27	733	1079
IOPSE	32	42	23	28	12	15	11	12	9	57	42	101	29	413
INPSE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	818	1089	606	714	319	376	275	303	241	1461	1079	2625	8985	

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;

Table 5: SAM with Import Quota Rent 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	0	0	0	0	0	0	0	0	0	0	0	0
ROWCL	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
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	

Table 5-a: Investment Matrix for Import Rents SAM

	IAGRI	IENER	IIRON	IMETA	ICHEM	ITEXT	IFOOD	IOTIN	ICNST	ITRAN	IOPSE	INPSE	IDST	TOTAL
IAGRI	1	0	0	0	0	0	0	0	0	0	0	0	11	12
IENER	0	0	0	0	0	0	0	0	0	0	0	0	3	3
IIRON	0	0	0	0	0	0	0	0	0	0	0	0	10	10
IMETA	20	30	19	22	11	11	8	10	9	38	21	13	153	365
ICHEM	0	0	0	0	0	0	0	0	0	0	0	0	40	40
ITEXT	0	0	0	0	0	0	0	0	0	0	0	0	48	48
IFOOD	0	0	0	0	0	0	0	0	0	0	0	0	13	13
IOTIN	0	0	0	0	0	0	0	0	0	0	0	0	12	13
ICNST	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITRAN	0	0	0	0	0	0	0	0	0	0	0	0	4	6
IOPSE	0	1	0	0	0	0	0	0	0	1	1	1	0	6
INPSE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	22	31	20	22	12	11	8	10	9	40	22	15	294	

For acronyms see footnote to table 4.

Table 6: SAM for Domestic Price Control Rent 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	2	5	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	

Table 6-a: Investment Matrix for Domestic Price Rent SAM

	IAGRI	IENER	IIRON	IMETA	ICHEM	ITEXT	IFOOD	IOTIN	ICNST	ITRAN	IOPSE	INPSE	IDST	TOTAL
IAGRI	9	0	0	0	0	0	0	0	0	0	0	0	84	93
IENER	0	0	0	0	0	0	0	0	0	0	0	0	9	9
IIRON	0	0	0	0	0	0	0	0	0	0	0	0	128	128
IMETA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ICHEM	0	0	0	0	0	0	0	0	0	0	0	0	103	103
ITEXT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IFOOD	0	0	0	0	0	0	0	0	0	0	0	0	88	88
IOTIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ICNST	41	61	27	33	10	19	14	13	6	87	89	335	22	757
ITRAN	4	5	3	3	2	2	1	1	1	6	3	3	72	106
IOPSE	7	9	5	6	3	3	2	2	2	12	9	22	6	88
INPSE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	60	74	35	42	14	24	17	17	9	105	101	360	513	

Fo acronyms see footnote to table 4.

Table 7: Negative Producer Rents (NPR) from Constrained Supply Response

Sectors[1]	ORIGINAL VALUES TABLE 4[2] Capital Stock	Gross Profits	Implicit NPR	ADJUSTED VALUES TABLES 5,6[2] Capital Stock	Gross Profits	Rate of Return (5)/(4)	VALUES FROM CORRECTED RR[2] Rate of Return or OCC	Gross Profits (7)-(4)	Implicit NPR (8)-(5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
AGRI	20669	6.5%	796	22746	1415	6.2%	10.3%	2343	928
ENER	22456	8.4%	428	24628	2848	11.6%	11.6%	2848	0
IRON	9401	7.1%	303	10241	989	9.7%	10.3%	1055	66
META	13229	18.1%	0	14432	1861	12.9%	12.9%	1861	0
CHEM	8911	11.9%	0	9631	1722	17.9%	17.9%	1722	0
TEXT	6101	21.0%	0	6669	1003	15.0%	15.0%	1003	0
FOOD	7822	16.6%	0	8551	1383	16.2%	16.2%	1383	0
OTIN	8663	10.1%	13	9426	420	4.5%	10.3%	971	551
CNST	7243	7.7%	188	7792	928	11.9%	11.9%	928	0
TRAN	32563	9.1%	395	35797	3007	8.4%	10.3%	3687	680
OPSE	14142	10.6%	0	15753	2797	17.8%	17.8%	2797	0
NPSE	12000	14.6%	0	13711	3969	29.0%	29.0%	3969	0
TOTA	163200	10.8%	123	179380	22342	12.5%	13.7%	24567	2225

[1] For sector acronyms see footnote 1 in table 2.

[2] In billions of 1987 Dinars.

Table 8: 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 4.