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GOVERNMENT TRANSFERS AND EXTRAREGIONAL PROPERTY INCOME -

EXOGENOUS OR ENDOGENOUS?

by

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This paper is primarily concerned with conceptual and identification issues pertaining to government transfers and earnings from external property, both of which have become major sources of personal income in many regions. The discussion, however, will be framed within the broader context of the economic base model and its application to communities with diverse economic bases which pose related identification problems arising from production sold to nonresidents who actually take delivery within the subject region (tourists, business travellers and shoppers for higher-order goods) and to residents who finance their purchases with extraregional revenues (income from the export of illegal goods in addition to government transfers and external property). Production undertaken for these buyers is not only difficult to identify, it also poses classification problems. It is the contention of this paper that a portion of this production is dependent on the level of total regional production and therefore should be classified as nonbasic despite its sale to nonresidents or residents expending external revenues.

This represents a departure from the simple economic base model illustrated in Figure 1 in which revenues of external origin enter a region in exchange for its exports. These revenues then are in part expended within the region and thereby induce additional production for local households, businesses and governments. Ultimately, the entire sum leaks out of the regional spending stream at which time the multiplier process comes to an end. The expenditure-induced production is the nonbasic of the simple model.

FIGURE 1

FLOWS OF REVENUES INTO, WITHIN AND OUT OF A REGION
SIMPLE ECONOMIC BASE MODEL
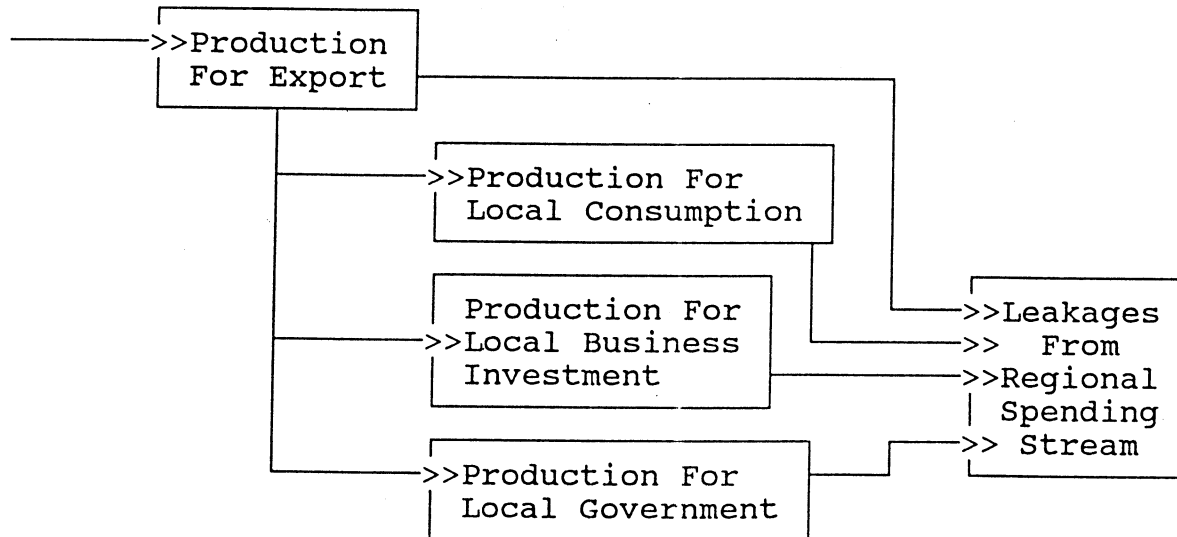
If, as proposed, nonbasic is defined to also include a portion of the production for nonresident visitors and residents who finance their purchases with extraregional revenues, and additional dependent component of production must be added, but one which is linked to the strategic basic sector indirectly through the effects of basic activity on levels of regional employment, population and the number of households which in turn determine the magnitude of the inflows of dependent external revenues. In Figure 2 this relationship is represented by a dashed line to distinguish it from those involving internal expenditures. The dependent external revenues, when spent, generate production for dependent tourists and recipients of dependent external income and indirectly, through respending, generate production for dependent local consumption, investment and government, all of which is classified as nonbasic.

FIGURE 2

FLOWS OF REVENUES INTO, WITHIN AND OUT OF A REGION
AMPLIFIED ECONOMIC BASE MODEL
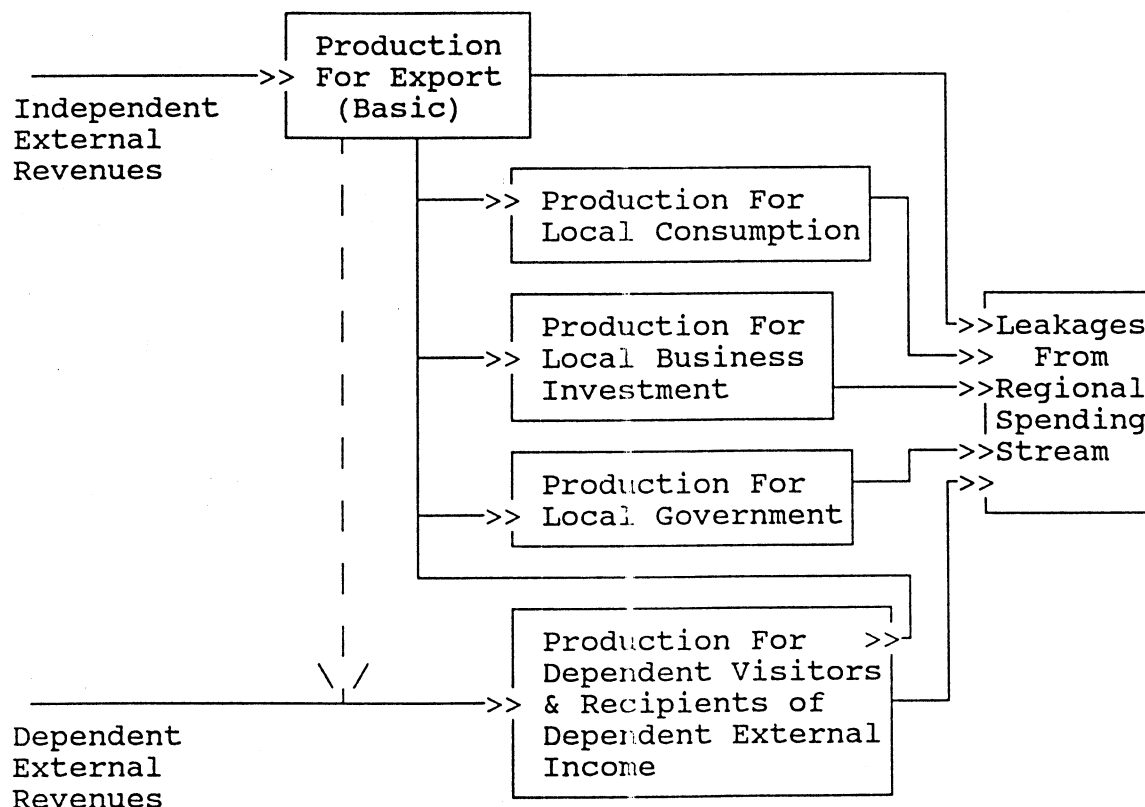
The case for this variant will be advanced within the context of an example in which all regional production is classified into nine major categories based on place or residence of buyer, place of delivery of output and source of financing as revealed in Table 1. These nine categories are also grouped into three different subsets of two based on location of residences of buyers, sources of revenues expended and place of delivery which also corresponds with type of goods[1], as indicated by the brackets on the left hand side of the table. These groupings are helpful in distinguishing the differences in the composition of the basic and nonbasic classifications which result form the adoption of alternative bifurcation methods and criteria.

In the hypothetical numerical example of Figure 3, the first panel represents total output disaggregated into the nine classifications of Table 1. In the other three panels these same components or production are classified as basic (second panel) the multiplier and induced production per dollar of basic are 1.67 and $.67, respectively, as indicated below the panel. On the other hand, if only the production sole to nonresidents is classified as basic (panel three), the multiplier is 2.5 and the induced nonbasic per dollar of basic is $1.50. The results are substantially different as indicated by the induced nonbasic which is the best indicator of the magnitude of the differences. If the issue were merely one of description, then a case might be made for either system of classification; however, if the purpose of the model is to enable impact assessment, forecasting and, more generally, enlightened regional, policy decisions, they must be judged by their accuracy when applied.

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1. Market-oriented goods are those produced in proximity to the place of delivery whereas the location of production sites of nonmarket-oriented goods is primarily determined by the availability of production inputs or other locational considerations and only incidentally by the place of ultimate delivery.
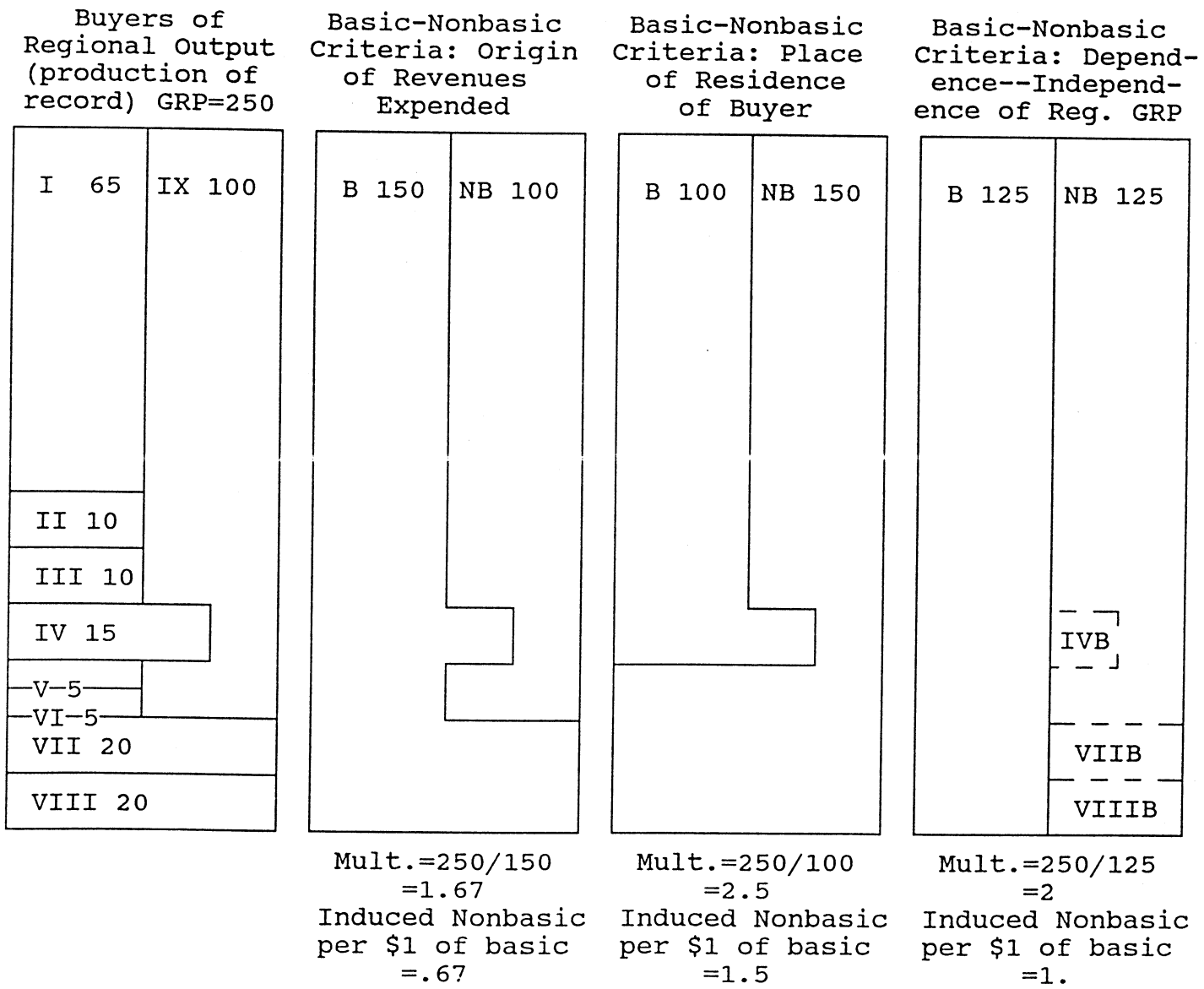
TABLE 1.   REGIONAL PRODUCTION CLASSIFIED BY PLACE OF DELIVERY, RESIDENCE AND SOURCE OF INCOME OF BUYER

CLASSIFICATIONS

I.   Production of goods sold to <u>nonresidents, delivered to extraregional sites</u> and financed by extraregional revenues.

II.   Production of services sold to <u>nonresidents, delivered to extraregional sites</u> and financed by extraregional revenues.

III.   Production of G & S sold to <u>nonresidents</u>, financed by extraregional revenues but <u>delivered within the region</u> -- shoppers for higher order goods.

IV.   Production of G & S sold to <u>nonresidents</u>, financed by extraregional revenue but delivered within the region -- tourists and business travellers
   A. Independent
   B. Dependent

V.   Production of G & S sold to <u>residents</u> but <u>financed with extraregional sources of revenue</u> -- exporters of illegal goods.

VI.   Production of G & S sold to <u>residents</u> but <u>financed with extraregional sources of revenue</u> -- commuter laborers.

VII.   Production of G & S sold to residents but financed with extraregional sources of revenue -- recipients of income from extraregional property
   A. Independent
   B. Dependent

VIII.   Production of G & S sold to residents but financed with extraregional sources of revenue -- recipients of government transfers
   A. Independent
   B. Dependent

IX.   Production of G & S sold to residents and financed with income generated by regional production
   A. Households
      1. Labor income
      2. Property income
   B. Local businesses -- capital goods
   C. Local Government

Left-side bracket labels:
NONMARKT. — DLVD. EXTRNL.
MARKET ORIENTED GOODS — DELIVERED INTERNALLY
FINANCED BY EXTERNAL REVENUES
INTERNAL
SOLD TO NONRESDNTS.
SOLD TO RESIDENTS

FIGURE 3

REGIONAL PRODUCTION BY RESIDENCE AND SOURCE OF REVENUES
OF BUYER, PLACE OF DELIVERY, AND BASIC-NONBASIC CLASSIFICATION
BY ALTERNATIVE CRITERIA

Buyers of Regional Output (production of record) GRP=250		Basic-Nonbasic Criteria: Origin of Revenues Expended		Basic-Nonbasic Criteria: Place of Residence of Buyer		Basic-Nonbasic Criteria: Dependence--Independence of Reg. GRP	
I 65	IX 100	B 150	NB 100	B 100	NB 150	B 125	NB 125

Mult.=250/150
=1.67
Induced Nonbasic
per $1 of basic
=.67

Mult.=250/100
=2.5
Induced Nonbasic
per $1 of basic
=1.5

Mult.=250/125
=2
Induced Nonbasic
per $1 of basic
=1.

The alleged correct classification (fourth panel) assigns to basic all production for nonresidents except one third of the production for business travellers and tourists (IV) and all production for residents who finance their purchases with external sources of income except one half of the production for recipients of income from external property and government transfers (VII & VIII). These, of course, are illustrative proportions and can be expected to vary by region.[2] The exceptions are made on the assumption that there is a direct relationship between the level of regional production on the one hand and the size of the labor force, population and number of households on the other. Allowing for time lags, a change in the level of regional production will increase the number of tourists who visit a region because of the presence of friends and relatives, the number of individuals eligible for various government transfer programs and the total value of household assets held in the form of claims to external property (stocks, bonds, other financial assets and real property). Also, the number of business visitors is directly related to the level of regional production.

In the example of Figure 3, the true multiplier has a value of 2; for each one dollar of basic production, an additional one dollar of production is induced form both residents who derive income directly and indirectly from production for "export"[3] and for dependent visitors and recipients of dependent income from government transfers and external property.

To classify as basic all production financed by external revenues (panel two) including the production undertaken for dependent visitors and recipients of dependent external revenues results in the underestimation of the impact that is attributable to the truly exogenous components of production. By this classification, the induced production of $.67 per one dollar of "exports" represents only the dependent component of production that is incurred for those who derive income directly and indirectly from the expenditure or "export" derived revenues. In the very short run, these may be the only effects inasmuch as the population responses, and therefore the dependent visitors and dependent income responses, to changes in the level of regional production involve time lags of varying length; but in; the longer run, the induced production will be fifty percent larger than accounted for by the 1.67 multiplier.

If, on the other hand, only the production for nonresidents is classified as basic, the impact attributable to the identified basic will be exaggerated inasmuch as the independent components of production for recipients of government transfers and income from external property will be treated as induced. The footloose retires, mobile rentiers, exporters of illegal drugs and commuter laborers are all treated as dependent on regional levels of production.

Given the conceptual argument, the difficult task then is to empirically distinguish between these dependent and independent components. None of the most common methods of bifurcation are capable of making these distinctions; however, because of other inherent identification problems this may not be immediately apparent. Figure 4, which assumes the same mix of output identified in panel one of Figure 3, provides illustrative examples that are suggestive of the sources of error that result from the survey, location quotient and assumption methods.

The survey method is suited to detection of direct exports of goods and services sold and delivered to external buyers. It is not suited to identifying indirect exports nor production of market-oriented goods sold to independent external buyers who take delivery locally and residents who finance their purchases with

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2.   Other components of production also may be dependent; however, they have been ignored because they are believed to be of lesser importance and/or even more difficult to identify. For example, as a region's output grows, so to does its market size and therefore the feasibility of producing goods of a higher order which in turn affects its attractiveness to external shoppers who seek higher order goods and to independent tourists. Also, there is likely to be a relationship between population size on the one hand and the number commuting to external jobs and the volume of illegal exports on the other. And to push the argument even further, growth in population can be expected to increase the number of creative individuals capable of generating new basic activities and the attractiveness and economic feasibility of a region as a location for new or expanded basic production; however, this line of reasoning runs the risk of attributing all economic activity to the historically first basic production.

3.   Exogenously determined production, all of which does not necessarily leave the region.

independent external sources of income. Therefore, only the direct portion of categories I and II, assumed to be 65, are indicated as detected.[4]

The location quotient method's most fundamental problem arises from its inability to detect genuine crosshauling (both imports and exports of the same good) which is aggravated by what I will call statistical crosshauling which occurs because of the grossness of the industrial classification by which data are generally available (both imports and exports within an industry classification but involving different goods).   The

FIGURE 4

ILLUSTRATIVE EXAMPLE OF
IDENTIFICATION BIASES OF ALTERNATIVE BIFURCATION METHODS

Basic-Nonbasic
Identification
By Survey

Basic-Nonbasic
Identification
By Location
Quotient

Basic-Nonbasic
Identification
By Assumption

Mult.=250/65
=3.85
Induced Nonbasic
per $1 of basic
=2.85

Mult.=250/86
=2.91
Induced Nonbasic
per $1 of basic
=1.91

Mult.=250/93
=2.69
Induced Nonbasic
per $1 of basic
=1.69
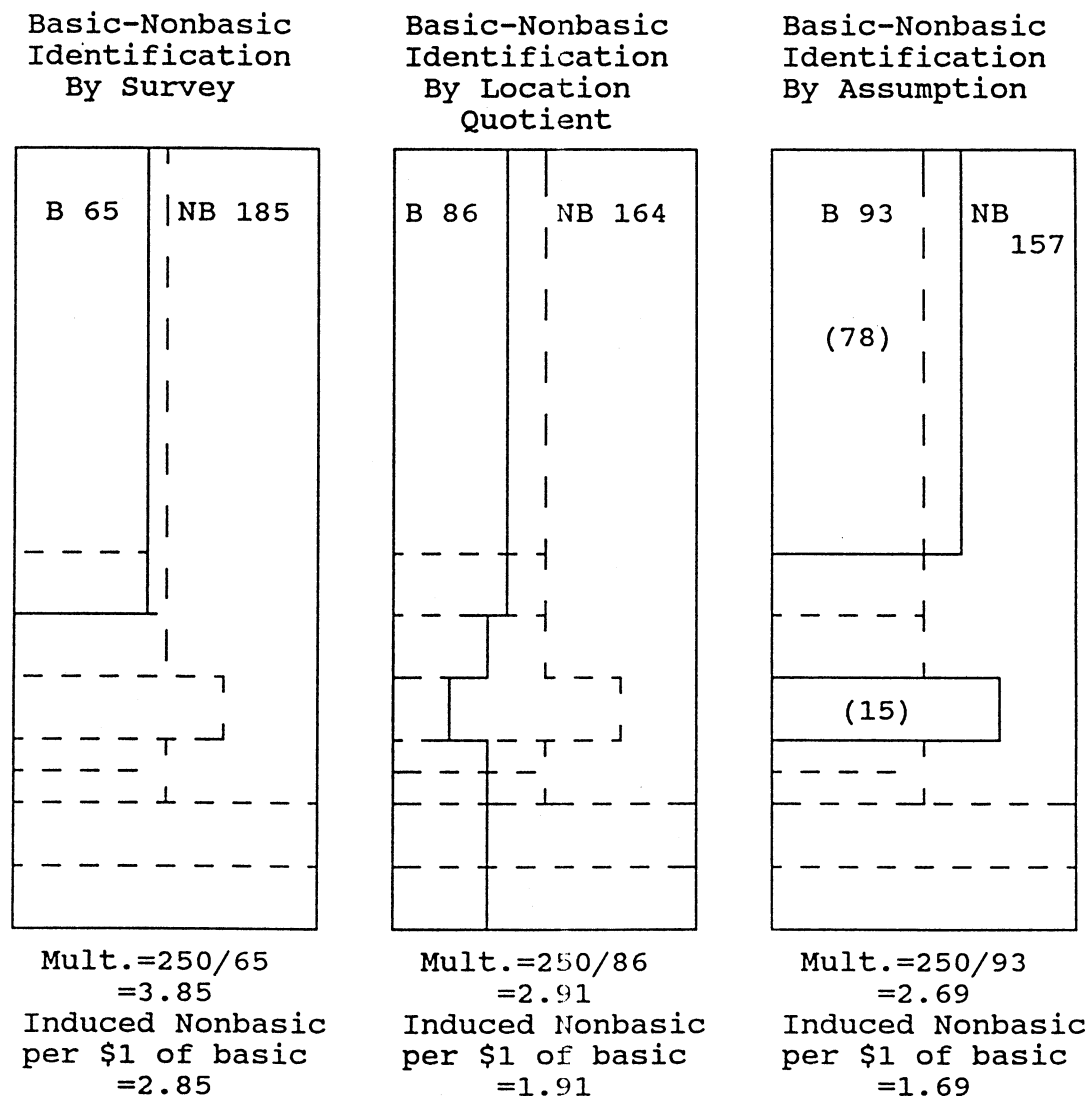
4. The survey is assumed to be directed to producers who in the case of sales of most market-oriented goods are unable to distinguish resident form nonresident buyers and, even should that be possible, there are the problems of identifying the sources of revenues expended by residents and when external their dependence or independence, as is also the problem with tourists and their dependence or independence.

problem is most severe for tourist-oriented industries whose output in geographically small regions is almost entirely basic but, given the assumptions of the method, some of it will be attributed to nonbasic consumption by residents when, in fact, their consumption of these goods is almost exclusively met by external producers located where the residents vacation. Also, basic production for residents who finance their purchases with independent external sources of income will be detected only insofar as the output of industries producing market-oriented goods is disproportionately high; however, even then, because of statistical crosshauling, lower-order goods that are exported will be missed if higher-order goods, classified in the same industrial categories, are imported. For example, a region may be average in both its production and consumption of medical services and yet also be both an exporter and importer, given its position in the hierarchy of central places. The basic estimate of 86 in the example is merely suggestive.

The assumption method illustrated in panel three of Figure 4 classifies as basic all extractive, manufacturing, state and federal government and tourism production. It errs insofar as some of this production is undertaken for residents and insofar as production of market-oriented goods, all of which is assumed to be nonbasic, is undertaken for independent visitors, residents who are recipients of independent external income and nonresident shoppers seeking higher-order goods.

The inadequacies of the most common bifurcation techniques has encouraged investigation of alternative data sources, particularly the United States Department of Commerce, Bureau of Economic analysis personal income data which includes classifications for government transfers, property income, and commuter labor income adjustments. Unfortunately, this data is not of much help. Commuter income adjustments measure inflows net of outflows. Property income is not distinguished by its geographic origins, therefore, the external property component must be extracted and even if this were possible, the share that is independent would still be unidentified as also would be the case for government transfers. Further, even if the independent components were identified, the impact on regional. production would still be unknown unless the average propensities to spend on regionally produced goods and services were also known.

To illustrate the problem, a hypothetical distribution of income, as reported in the upper section of Table 2 and panel one of Figure 5, is added to the example of Figure 3 in which total regional production is 250. Some of this income accrues as disposable income to residents, defined to include local households, businesses and governments, who also receive disposable income from external sources as indicated in the lower section of Table 2 and panel two of Figure 5. It is this disposable income that is responsible for the regional production undertaken for residents. Arrows connect each classification of disposable income that originated within the region to the components of production for which it is responsible (panel three). The magnitudes of the induced production for which it is responsible (panel three). The magnitudes of the induced production, which when summed constitutes the 100 of category IX of Figure 3, are determined by both the magnitudes of the disposable incomes and the average propensities to spend on regional goods (APS), the latter of which appear above the arrows. These hypothetical propensities are then assumed to be applicable to external sources of labor and property income or as proxies for propensities to spend income from transfers and illegal exports as indicated by the values above the arrows connecting the external components of disposable income with the relevant components of production indicated in panel four of Figure 5.

Unfortunately, this exercise is not susceptible to empirical replication. Using secondary data, we cannot quantify the external sources of income by component or in aggregate, or the value of goods and services produced for the various income recipients,[5] or the average propensities to spend. Further, even should this be possible, it still would not produce results that would distinguish the dependent from independent components of productions for recipients of external income.

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5.   It should be recognized that BEA data is inclusive of personal taxes and, hence, is not equivalent to the disposable income of the hypothetical example.
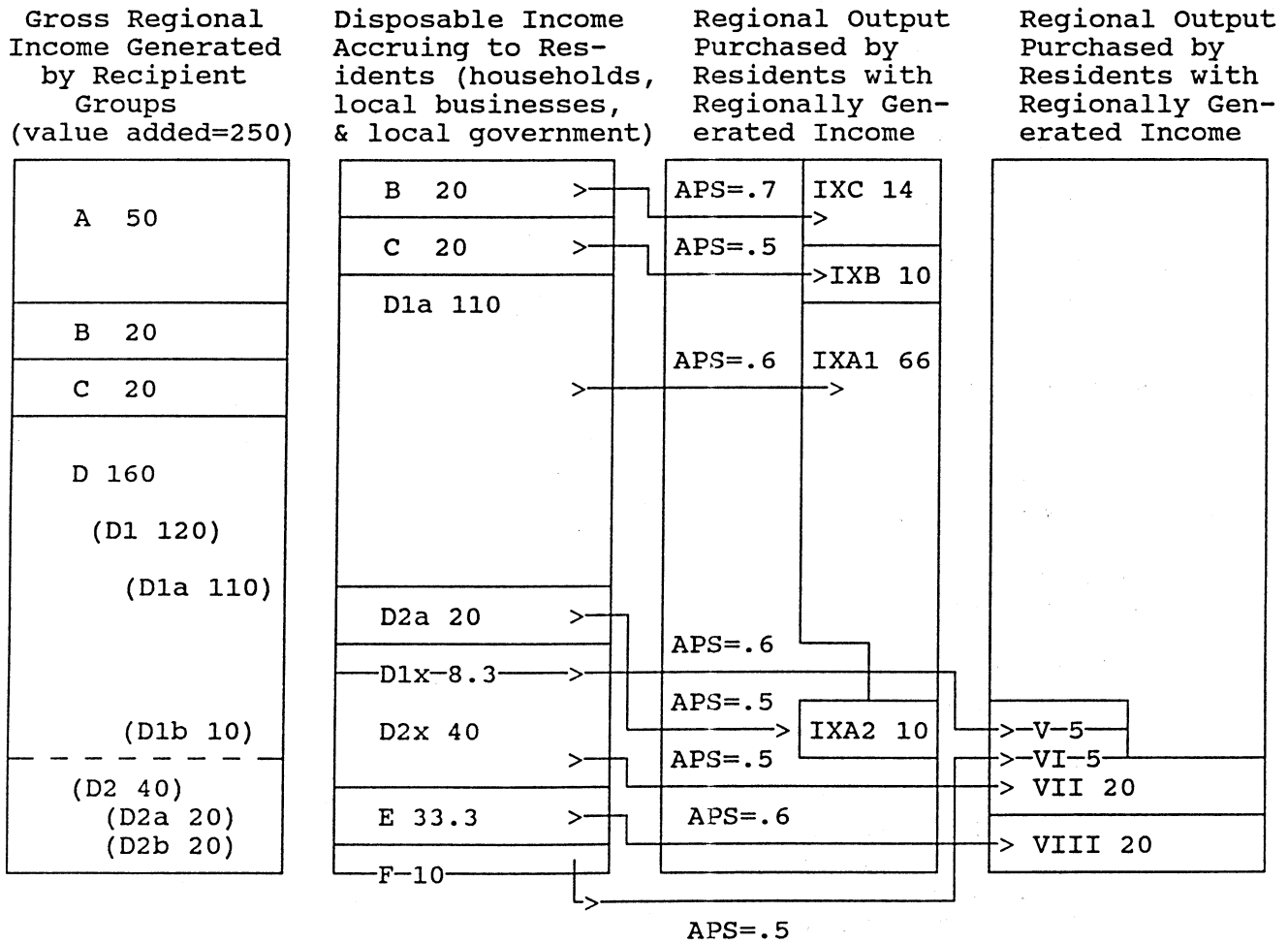
TABLE 2.   INCOME BY PLACE OF GENERATION AND PLACE OF RESIDENCE

Distribution of Income Generated

A.	State & federal government			50
B.	Local government			20
C.	Local business			20
	1.	Depreciation	10	
	2.	Undistributed profits	10	
D.	Personal disposable income			160
	1.	Labor income		120
		a. Residents	110	
		b. Nonresidents	10	
	2.	Property income		40
		a. Residents	20	
		b. Nonresidents	20	

Total income generated in the region   250

Income Accruing to Residents (local
  households, businesses, & government)

B.	Local government revenues from regional procuetion			20
C.	Local business revenues derived from regional production			20
D.	Personal disposable income			178.3
	1.	Labor income		111.83
		1a. Earned in region	110	
		1x. Earned externally	8.3	
	2.	Property income		60
		2a. Earned in region	20	
		2x. Earned externally	40	
E.	Government transfers			33.3
F.	Income from illegal exports			10

Total disposable income accruing to residents   261.6
  (local households, businesses & governments)

FIGURE 5

INCOME GENERATED, INCOME ACCRUING TO RESIDENTS (HOUSEHOLDS,
LOCAL BUSINESS AND LOCAL GOVERNMENT) AND EXPENDITURES BY SOURCE
OF INCOME ON REGIONALLY PRODUCED GOODS AND SERVICES GIVEN AVERAGE
PROPENSITIES TO SPEND ON REGIONAL GOODS AND SERVICES

Gross Regional Income Generated by Recipient Groups (value added=250)	Disposable Income Accruing to Residents (households, local businesses, & local government)	Regional Output Purchased by Residents with Regionally Generated Income	Regional Output Purchased by Residents with Regionally Generated Income

Two conclusions emerge. If the economic base model is to remain viable when applied to regions whose economic base includes significant levels of production for independent visitors and residents who are recipients of independent sources of external income the identification problems addressed in this paper must be resolved or at least acknowledged and the results properly qualified. The alternative is to abandon the model in favor of input-out-put or econometric models. However, it should be noted that the issues identified in this paper must also be recognized in the specification and implementation of those models.