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The structures of production, final demand and agricultural output: a Macro Multipliers analysis of the Nigerian economy

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Abstract This study made an effort to build the Social Accounting Matrix for the Nigerian economy, which describes the income circular flow through the integration of the production with the income flows, including both the generation and the distribution of value added and the creation of final demand. Such database allows developing an extended input–output model and a Macro Multipliers analysis based on the technique of singular value decomposition. First, the analysis identifies the key sectors amongst the agricultural sectors that have significant interactions with the other commodities of the economy. Furthermore, the Macro Multipliers analysis is conducted in order to identify the interactions between policy objective (total output) and policy control (final demand) at a multi-sectoral level.

Keywords Final demand · Agriculture output · Social Accounting Matrix · Extended input–output analysis · Macro Multiplier analysis

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1 Introduction

The Nigerian economy has risen to a crescendo in the last decade, but it is by no means certain how the economic benefits of such growth will affect the population in positive way—not until the empirical evidence proves this to be a consistent boom. From 2000 to 2012 the average GDP per capita increased at a fast step (+8.75%),[1] but the unemployment rate reached the level of 23.9% in 2011 compared to 12.7% in 2007 (NPC 2012). The incidence of poverty accounts for 62.6% of the total population. Inequality rates have also been increasing and in rural areas up to 80% of the population is living below the poverty line (IFAD 2012). This condition is related to the structure of the Nigerian economy that is highly dependent on oil revenue (oil and gas sectors accounts for 35% of GDP—OPEC 2013), and to the recent expansion of private sector financing, of crude oil production and favorable weather conditions that boosted agriculture output among others (CBN 2011). Indeed, agriculture, besides oil, is the largest sector of the Nigerian economy and is the main source of livelihood for most Nigerian inhabitants. However, it faces many challenges like an outdated land tenure system, low level of irrigation development, limited adoption of research and innovation technologies, high cost of farm inputs, and poor access to credit, inefficient fertilizer procurement and distribution, inadequate storage facilities and poor access to markets.[2] These combined impediments have considerably choked the progressive agriculture productivity, with high post-harvest losses and waste.

In 2012 the Nigerian government established the Agricultural Transformation Agenda (ATA)[3] as a component of the broader National Transformation Agenda, with the aim of achieving self-sufficiency in selected agricultural sectors and basic food commodities, for which the country has comparative advantages, and which consume considerable shares of Nigeria's foreign exchange. The wider intent is to include agricultural targets into a structural transformation for the overall socio-economic development of the country allowing an improvement in the quality of life, ensure food security[4] and stimulate employment rates.

The implementation of such policies leads to questions as to what is the structure of production of the Nigerian economy, and which agricultural sectors can actually boost the economy directly and indirectly, when a shock on final demand occurs. In the economic literature, the structure of production can be identified according to the concept of technology, or the importance of the sectors in the economy in

[1] WDI World Bank.

[2] FAO report on Nigerian economy. Available at: http://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/.

[3] Nigerian Agricultural Transformation Agenda, Federal Ministry of Agriculture and Rural Development http://www.fmard.gov.ng/.

[4] Professor Chinedum Nwajiuba, Nigeria's Agriculture and Food Security Challenges. Available at: https://us.boell.org/sites/default/files/downloads/4_Green_Deal_Nigeria_AGRICULTURE.pdf.

terms of output or factor utilization (Soofi 1992). The common aspect of the studies on structure of production is the interactions among different sectors of the economy. The pioneer work on the structure of production includes the seminal studies of Leontief (1953) and Rasmussen (1956). Leontief studied the internal structure of inter-industry transactions using the input–output tables of the USA and developed an analytical framework to identify the inter-dependence and circularity of industries. Similarly, Rasmussen developed a method to study the industrial connection of Denmark using an open static input–output model. Several other single countries studies followed these approaches[5] and in the last century, some cross-country comparative studies have been conducted.[6]

These aforementioned studies developed linkages on the bases of input–output tables that do not take into account the process of primary and secondary income distribution among Institutional Sectors, giving incomplete information about the whole economy. Hence, the use of Social Accounting Matrices provides a comprehensive framework for the inter-industry analysis as well as the income-expenditure linkages (Pyatt and Round 1979, 1985). Using the Social Accounting Matrix (SAM) database for the dispersion analysis allows determining the contribution of each commodity to the income generation, considering the direct and indirect impact of a final demand shock on production, but also the income distribution following the relationships among Institutional Sectors (Polo et al. 1990; Defourny and Thorbecke 1984; Ciaschini et al. 2010).

As for the African economies, there are some studies regarding the production structure and the linkages analysis of Egypt, Morocco and Zambia (Soofi 1992), Algeria (Matallah and Proops 1992), showing some similarities in the structure of agricultural sector. However, these studies are all developed on the base of the input–output tables, not SAMs although this dataset is available for many African countries (IFPRI).[7]

In this study a multi-sector, multi-factor and multi-industry input–output model based on the Social Accounting Matrix (SAM) of Nigerian economy is developed. The study aims first to identify the structure of Nigerian production processes and

[5] Forssell (1988) on Finnish economy for the period 1960–1970, Urata (1988) on Soviet economy between 1959 and 972, Skolka (1989) on Austrian economy, Lee (1990) on US economy for 192-82, Khan (1991) on Pakistan's economy and Matallah and Proops (1992) on Algerian economy.

[6] To mention a few, a comparative study by Chenery and Watanabe (1958) concludes the uniformity in the structure of production of Finland, Italy, Japan, and the USA. Whilst, several other comparative studies include the work of Simpson and Tusukui (1965), Robinson and Markandya (1974), Kubo et al. (1986a, b) and Soofi (1992). A condensed list of the studies on structure of production and linkages analyses is presented up to now representing different economies and different approaches. To name a few, Hoen (2002) used cluster-based methodology to identify the inter-industry linkages. While Cai and Leung (2004) used archival approach to present refined backward and forward linkage indices using practical exercise on Hawaii's agricultural sectors. On the other hand, Peters and Herwich (2006) conducted the structural path analysis on Norwegian economy to identify the linkages between the global production networks and domestic production and consumption. Moreover, some other prominent studies include a work by Leung and Secrieru (2012) on Canadian economy, Harada (2015) on Japanese economy, and Chang and Lahr (2016) on Chinese economy.

[7] IFPRI developed SAMs for Zimbabwe (year 1991), Morocco (1994), Mozambique (1994, 1995), Egypt (1997), South Africa (1993, 1998, 1999), Zambia (1995, 2001) and Kenya (2001).

income distribution, by identifying the key sectors in general and agriculture sectors for the economic system. Secondly, the study utilizes a Macro Multiplier (MM) analysis based on the singular value decomposition in order to present the interactions between the policy objective (total output) and the structure of the policy measure (policy control), following the study done by Ciaschini and Socci (2007b) for the Italian economy developed on a SAM database. For this purpose, the next section is devoted to a description of the main features of the SAM for Nigeria elaborated for the year 2010. Then the methodology is presented in Sect. 3. Sections 4 and 5 describe the results of the analysis of backward and forward linkages and the Macro Multipliers approach respectively. The last section provides some concluding remarks on the analysis and perspective for Nigerian Economy.

2 The social accounting matrix for Nigeria

The SAM integrates the detailed data on production, income and expenditure, thereby allowing a systematic recording of economic transactions occurring among the agents (Doukkali and Lejars 2015). It presents a data framework to explain the income circular flow that stems from the market interactions among the institutions (Ciaschini and Socci 2006, 2007b; Ciaschini et al. 2012). The final demand determines the total output that in turn generates value added by commodity. The value added gives rise to domestic income by factors, which create disposable income by Institutional Sectors. Finally, this domestic income brings about the final demand thereby closing the loop. The matrix representation of SAM encompasses a consistent nucleus that can be extended accordingly in the development of economy-wide policy models (Pyatt and Round 1977; Pyatt 1999).

The development of the SAM for Nigeria required two different phases. First, the official national accounts of Nigeria for the year 2010 were arranged in the National Accounting Matrix (NAM) as a general referring framework. Second, a SAM with a detailed disaggregation of the agricultural sectors, value added components and Institutional Sectors was derived maintaining the consistence with the macroeconomic aggregates.

2.1 The national accounting matrix for Nigeria

The NAM for Nigeria integrates the national accounts and other sources of information with the economic theory. To obtain the NAM, the information regarding the national accounts and other statistical data has been collected from a variety of sources including: Nigerian National Bureau of Statistics (NBS), Central Bank of Nigeria (CBN), Joint Tax Board (JTB), Food and Agriculture Organization (FAO), General Household Survey (2010–2011), and the World Bank. Information from the previous Nigerian SAM for 2006, developed by International Food Policy Research Institute (IFPRI) in 2010 (Nwafor et al. 2010), has also been used.

The NAM is characterized by a set of rows and columns headed to the commodities, activities, primary factors, institutional sectors (Households, Firms, and

Government), capital formation and Rest of the World, as shown in Table 1. The sums of the column in the NAM database represent the expenditures whereas the corresponding sums of row give the incomes of the economic entities. More specifically, commodities refer to goods and services produced by production processes, and activities refer to the technology used by each production process to produce goods and services (Breisinger and Thomas 2009). The activities produce commodities by employing the other commodities and services as intermediate consumption and primary factors, such as land, labour and capital. The activities pay owners of factors in the form of wages [R4–C3] to households and profits [R5–R6–C3] to government, firms and rest of world. The first column of Table 1 presents the domestic supply [R2–C1], taxes on products [R7–C1] and imports [R9–C1]. Adding them together, the sum of first column gives the total supply of goods and services available in the market. On the other hand, the intermediate consumption [R1–C2], in second column, represents a payment from activities to commodities for the goods and services in the domestic market used in the production process. Column 2 also registers the value added [R3–C2] and production taxes [R7–C2]. Adding them together, the sum of column C2 gives the total output by activities in the economy. The data needed to build this first part of the NAM is derived from Supply and Use Tables (SUT) for 2010 developed by the Nigerian NBS.

Column C3 refers to primary factors and identifies the compensation of employees [R4–C3] paid to Households and the share of profits paid to Firms [R5–C3], Government [R6–C3] and Rest of World [R9–C3]. The sum of column C3 gives the total of factor income. Since the information on the distribution of primary incomes are not available, shares from aggregated previous SAM for 2006 are used to obtain the aggregated values of primary income distribution.

Column C4 presents the total expenditure of households in terms of household consumption [R1–C4], personal income tax [R7–C4] and savings [R8–C4]. On the other hand, column C5 gives the total expenditure of firms as the sum of transfers to households [R4–C5], corporate income tax [R7–C5], savings [R8–C4] and payment to the Rest of the World [R9–C5]. The government expenditure is depicted by column C6 summing up: government consumption [R1–C6], transfers to households [R4–C6] and savings [R8–C6]. Column C7 refers to direct and indirect taxes [R6–C7] received by the government from all the economic agents. The investment demand [R1–C8] is described by column C8 whereas column C9 summarizes the exports [R1–C9], foreign remittances [R4–C9], government income from abroad [R6–C9], and current account balance [R8–C9]. Adding them together, column C9 gives the total foreign exchange inflow. All data on final consumption by Institutional Sector, Exports, Investments and Indirect Net Taxes is derived from SUT during 2010, developed by Nigerian NBS. The data are compatible with data on production and allow maintaining the balance between total supply and total demand by activity, and commodity from national accounts. Data on savings, taxes and transfers to/from other Institutional Sectors is derived from the combination of aggregate data from national accounts of Nigeria NBS, consistent with SUT data, and information from Central Bank of Nigeria (CBN), Joint Tax Board (JTB), Food and Agriculture Organization (FAO), General Household Survey (2010–2011). More specifically, given the aggregate value of the aggregate (e.g. savings), data from the other

Table 1 National Accounting Matrix Framework

	n.	Commodities	Activities	Factors	Households	Firms	Government	Taxes	Capital formation	ROW	Total
		C1	C2	C3	C4	C5	C6	C7	C8	C9	
Commodities	R1		Intermediate consumption		Household consumption		Government consumption		Investment demand	Exports	Total demand
Activities	R2	Domestic supply									Total output
Factors	R3		Value added								Factor income
Households	R4			Compensation of employees		Transfers to households	Transfers to households			Foreign remittances	Household income
Firms	R5			Firms share of profits						Firms incomes from abroad	Firms income
Government	R6			Government share of profits				Direct and indirect taxes		Government income from abroad	Government income
Taxes	R7	Taxes on products	Production taxes		Personal income tax	Company income tax					Taxes
Capital formation	R8				Household savings	Firms savings	Government savings			Current account balance	Total savings
ROW	R9	Imports		Row share of profits		Payment to ROW					Foreign outflow
Total		Total supply	Total output	Factor income	Household expenditure	Firms expenditure	Government expenditure	Taxes	Total investment	Foreign inflow	

sources are used to calculate the shares of distribution to keep the coherence within the NAM's flows, and consistency with national accounts.

The accounts of NAM can be used to find the GDP, both at factor cost and by final demand. GDP at factor cost is determined with the sum of value added [R3–C2], production taxes [R7–C2] and taxes on products [R7–C1]. Likewise, GDP by final demand is computed as the sum of final consumption expenditures of households [R1–C4] and government [R1–C6], plus investment [R1–C8], plus exports [R1–C9], minus imports [R9–C1]. The final NAM is depicted in Table 2.

2.2 From National Accounting Matrix to Social Accounting Matrix for Nigeria

The NAM illustrated in Table 2 serves as the basic framework to derive the SAM for Nigeria where a more accurate disaggregation of commodities, activities, primary factors and institutional sectors is provided, according to socio-economic criteria (Round 1985). The current SAM is developed, keeping in view the relevance of the agricultural sectors in Nigeria and the unequal income distribution among Institutional Sectors (Households in particular) among Nigerian regions and between urban and rural areas. Therefore, the final SAM includes the following accounts:

- 66 commodities.
- 66 activities.
- 8 primary factors.
- 26 Institutional Sectors.[8]
- Rest of the world.
- Capital formation.

Since the current SAM is aimed to give a comprehensive detail of agriculture commodities and activities, it was imperative to incorporate more agriculture commodities and activities in the new dataset, with respect to the NAM. To this end, supplementary information on agriculture sectors was collected from NBS and the previous SAM for 2006, in order to derive a SAM with 66 commodities and 66 activities, of which 27 commodities and activities belong to the agriculture sector.[9]

The GDP shares of sectors, based on the results of Nigeria SAM, are presented in Table 3. The services sector has the largest GDP share in 2010 (54%) followed by agriculture (23.6%) and mining (15.4%) respectively. On the other hand, the largest share of GDP from agriculture is occupied by yams (25.6%) followed by vegetables (19.7%).

Similarly, the final SAM provides a more accurate breakdown of primary factors or value added components. There are eight components in total, aside from indirect taxes: six categories of labour, one category of capital and one category of land.

[8] These include 24 categories of Households, 1 category of Firms and 1 category of Government.
[9] See Appendix A.

Table 2 National Accounting Matrix for Nigeria for 2010—Million Naira

	n.	Commodities C1	Activities C2	Factors C3	Households C4	Firms C5	Government C6	Taxes C7	Capital formation C8	ROW C9	Total
Commodities	R1		38,757,838		37,203,508		5,056,628		9,591,049	13,472,905	104,081,928
Activities	R2	93,370,093									93,370,093
Factors	R3		54,315,992								54,315,992
Households	R4			30,817,402		7,117,884	3,732,813			3,184,842	44,852,941
Firms	R5			20,098,908							20,098,908
Government	R6			3,399,682				3,981,152		411,639	7,792,473
Taxes	R7	857,085	296,263		225,804	2,602,000					3,981,152
Capital formation	R8				7,423,629	6,993,513	−996,968			−3,829,125	9,591,049
ROW	R9	9,854,750		0		3,385,511					13,240,261
Total		104,081,928	93,370,093	54,315,992	44,852,941	20,098,908	7,792,473	3,981,152	9,591,049	13,240,261	

Source: elaborated from NBS official statistical data

Table 3 Sectors/subsectors in the Nigeria SAM and their shares of GDP and agricultural GDP in 2010

Sectors/subsectors		GDP Million Naira	Share of GDP (%)	Share of agr. GDP (%)
Agriculture		12,824,341	23.6	
1	Rice unprocessed	360,699	0.7	2.8
2	Wheat unprocessed	23,894	0.0	0.2
3	Maize	708,074	1.3	5.5
4	Sorghum	421,175	0.8	3.3
5	Millet	491,695	0.9	3.8
6	Other cereals	15,321	0.0	0.1
7	Vegetables	2,524,023	4.6	19.7
8	Bananas	104,995	0.2	0.8
9	Plantains and others	961,026	1.8	7.5
10	Pineapples	345,187	0.6	2.7
11	Oranges	98,603	0.2	0.8
12	Other fruits and nuts	150,223	0.3	1.2
13	Soya beans	14,244	0.0	0.1
14	Groundnuts	200,195	0.4	1.6
15	Oilseeds and oleaginous fruits	429,391	0.8	3.3
16	Cassava unprocessed	226,105	0.4	1.8
17	Yams	3,282,060	6.0	25.6
18	Potatoes	382,266	0.7	3.0
19	Sweet potatoes	30,917	0.1	0.2
20	Edible roots and tubers	238,893	0.4	1.9
21	Stimulant, spice and aromatic crops, n.e.c.	100,834	0.2	0.8
22	Pulses	216,099	0.4	1.7
23	Other crops	133,462	0.2	1.0

Table 3 (continued)

Sectors/subsectors		GDP Million Naira	Share of GDP (%)	Share of agr. GDP (%)
24	Livestock, poultry, meat and animal products	979,539	1.8	7.6
25	Forestry	135,717	0.2	1.1
26	Fisheries unprocessed capture	187,278	0.3	1.5
27	Fisheries unprocessed aqua	62,426	0.1	0.5
Manufacturing		3,797,556	7.0	
28	Processed cassava	230,021	0.4	
29	Processed rice	13,869	0.0	
30	Processed wheat	331,108	0.6	
31	Other processed food, beverage and tobacco	1,897,360	3.5	
32	Processed fisheries capture	10,690	0.0	
33	Processed fisheries aqua	3564	0.0	
34	Cement, stone, plastic, quarrying and other minerals	266,832	0.5	
35	Oil refining	255,152	0.5	
36	Textile, leather, apparel and footwear	351,801	0.6	
37	Wood and wood products	122,531	0.2	
38	Pulp, paper and paper products	23,441	0.0	
39	Fertilizers, pesticides, chemical and pharmaceutical products	24,802	0.0	
40	Non-metallic products	57,136	0.1	
41	Plastic and rubber products	30,346	0.1	
42	Basic metal, iron and steel	44,292	0.1	
43	Motor vehicles and assembly	20,151	0.0	
44	Other manufacturing	114,460	0.2	
Mining		8,343,745	15.4	
45	Coal mining	41,333	0.1	
46	Crude petroleum and natural gas	8,300,470	15.3	

Table 3 (continued)

Sectors/subsectors		GDP Million Naira	Share of GDP (%)	Share of agr. GDP (%)
47	Metal ores	1942	0.0	
Services		29,350,350	54.0	
48	Electricity, water supply and waste mgt	1,127,638	2.1	
49	Construction	659,512	1.2	
50	Trade	8,965,416	16.5	
51	Accommodation and food services	227,973	0.4	
52	Transport road, water, air and rail etc.	669,230	1.2	
53	Telecommunications	4,927,129	9.1	
54	Motion pictures, sound recording and music production	479,181	0.9	
55	Publishing	8527	0.0	
56	Post	15,536	0.0	
57	Broadcasting	533,236	1.0	
58	Arts, entertainment and recreation	30,935	0.1	
59	Financial institutions, insurance etc.	1,908,804	3.5	
60	Real estate	4,127,988	7.6	
61	Professional, scientific and technical services	1,686,897	3.1	
62	Administrative and support services	13,139	0.0	
63	Public administration	1,998,470	3.7	
64	Education	782,142	1.4	
65	Human health and social services	330,123	0.6	
66	Other services	858,474	1.6	

The labour is disaggregated using the information of income generating activities presented in the Nigerian general household survey for 2010 in: hired labour, family labour and self-employed. Each labour category is furtherly split in agriculture and industrial.[10]

The shares for land were obtained using the structure of land shares from the 2006 Nigerian SAM. Finally, the current SAM, for 2010, identifies 24 Household categories in order to capture the distributional impacts of national policies. This breakdown of households is carried out using the information from the Nigerian general household survey. The households are firstly grouped into six geopolitical zones: North Central, North East, North West, South East, South–South and South West. They are furtherly classified as belonging to urban and rural areas. Since the information on the distribution of primary income is not available, shares from aggregated previous SAM for 2006 are used to obtain the aggregated values of primary income distribution.

3 The multi-sectoral approach: model, indices and Macro Multipliers

The current study employs a multi-industry, multi-factor and multi-sector model whose underpinnings lie in a Miyazawa approach (Bulmer 1982; Miller and Blair 2009; Miyazawa 1976). However, the model is based on the SAM scheme, presenting the extended income circular flow wherein the interactions between industries and institutions could be specified and evaluated (Ciaschini and Socci 2007a, b). The current model assumes fixed prices, and constant technical coefficients and shares.

Figure 1 portrays the fundamental mechanism of production and distribution in terms of interaction among production processes, primary factors and institutional sectors. The arrows in Fig. 1 identify the expenditure flow while the boxes present the transformation of a flow variable into another. The whole income distribution process creates a feedback loop, with arrows between industry output and final demand. It presents several logical phases. Starting from production process that takes place at industry level leads to the total output, $\mathbf{x}$, and generates a gross value added, $\mathbf{v}(x)$, (gross value added generation). Value added by n I–O industry is then allocated to the c value added components, $\mathbf{v}^{c}(x)$, (gross value added allocation). The loop further continues to the allocation of value added by components to h institutional sectors, $\mathrm{v}^{s}(x)$ (primary income distribution). The primary income is further redistributed among the institutional sectors through taxation and other transfers generating disposable incomes by the h institutional sectors, $\mathbf{y}(x)$, (secondary income distribution). Finally, the disposable income identifies the final demand by institutional sectors which characterize the final demand by I–O industries, $\mathbf{f}(x)$, (final demand formation).

[10] The hired labour in the general household survey refers to the labor employed by a person who works for someone not a member of household, for example; an enterprise, company, the government or any other individual. Whereas the family labour means the labour employed by the person who works on a farm owned or rented by a member of household. On the other hand, the self-employed refers to the labor employed by the person who works on own account or in a business enterprise belonging to household or someone in household such as trader, shop-keeper, barber, dressmaker, carpenter or taxi driver.

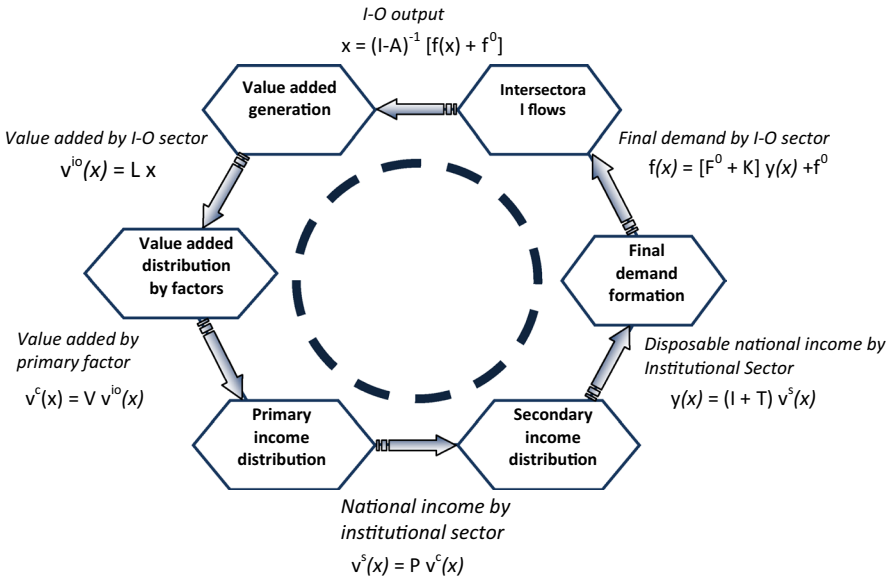

Fig. 1 Extended input–output model

The extended input–output model can be elaborated with the following fundamental equation:

$$\mathbf{x} + \mathbf{m} = \mathbf{B} \cdot \mathbf{i} + \mathbf{f} \tag{1}$$

where **x** is the output vector of each activity, **m** is imports vector, matrix **B** is intermediate consumption, **i** is the row sum vector and **f** is the final demand vector. This study employs a large part of final demand as endogenous, therefore the distributive structural matrices are determined to analyze the exogenous final demand.

Gross value added generation (by industry)

$$\mathbf{v}^{io}(x) = \mathbf{L} \cdot \mathbf{x} \tag{2}$$

where **L** [*n*,*n*] gives the value added shares by industry originating from the output vector and technical coefficients matrix.

Gross value added allocation (by VA components)

$$\mathbf{v}^{\mathrm{c}}(x) = \mathbf{V} \cdot \mathbf{v}^{io}(x) \tag{3}$$

where **V** [*c*,*n*] refers to the allocation of value added to the value added components.

Primary distribution of income (by institutional sectors)

$$\mathbf{v}^{\mathrm{s}}(\mathrm{x}) = \mathbf{P} \cdot \mathbf{v}^{\mathrm{c}}(x) \tag{4}$$

where **P** [*h*,c] represents the distribution of a factors' value added income to the institutional sectors.

Secondary distribution of income (by Institutional sectors)

$$\mathbf{y}(x) = (\mathbf{I} + \mathbf{T}) \cdot \mathbf{v}^{\mathrm{s}}(x) \tag{5}$$

where $\mathbf{T}$ [h,h] refers to the net income transfers among the institutional sectors.

Final demand formation (by industry)

$$\mathbf{f}(x) = \mathbf{F}^0 \cdot \mathbf{y}(x) + \mathbf{K} \cdot \mathbf{y}(x) + \mathbf{f}^0 \tag{6}$$

where $\mathbf{F}^0$ comprises the structure of consumption demand by industry and is given by the product of two matrices, $\mathbf{F}^0 = \mathbf{F}^1 \cdot \mathbf{C}$, where $\mathbf{F}^1$ [n,h] transforms the consumption expenditure by institutional sector into consumption by industry and $\mathbf{C}$ [h,h] represents the consumptions propensities by institutional sector.

The matrix $\mathbf{K}$ represents the shares of demand for investment and is given by $\mathbf{K} = \mathbf{K}^1 \cdot d \cdot (\mathbf{I} - \mathbf{C})$ where $\mathbf{K}^1[n,h]$ characterizes the investment demands to I–O industry and scalar d represents the share of private savings which is transformed into investment, referred to as 'active savings'; $\mathbf{f}^0$ is a vector of m elements which characterizes exogenous demand.

Using $\mathbf{F} = [\mathbf{F}^0 + \mathbf{K}]$, Eq. (6) becomes:

$$\mathbf{f}(x) = \mathbf{F} \cdot \mathbf{y}(x) + \mathbf{f}^0 \tag{7}$$

Substituting through the Eqs. (2)–(6) in Eq. (7), we have:

$$\mathbf{f}(x) = \mathbf{F} \cdot [\mathbf{I} + \mathbf{T}] \cdot \mathbf{P} \cdot \mathbf{V} \cdot \mathbf{L} \cdot \mathbf{x} + \mathbf{f}^0. \tag{8}$$

The output generation process exhibited by Eq. (1) is given as:

Output generation

$$\mathbf{x} + \mathbf{m} = \mathbf{A} \cdot \mathbf{x} + \mathbf{f}(x) \tag{9}$$

where $\mathbf{m}$ represents imports, A is technical coefficient matrix and $\mathbf{f}(x)$ refers to the demand vector.

Substituting the Eq. (8) in Eq. (9), we obtain:

$$\mathbf{x} = [\mathbf{I} - \mathbf{A} - \mathbf{F} \cdot (\mathbf{I} + \mathbf{T}) \cdot \mathbf{P} \cdot \mathbf{V} \cdot \mathbf{L}]^{-1} \cdot (\mathbf{f}^0 - \mathbf{m}) \tag{10}$$

from which we can obtain the structural matrix $\mathbf{R}$ that helps quantifying the direct and indirect effects of final demand shocks on total output:

$$\boldsymbol{R} = [\boldsymbol{I} - \boldsymbol{A} - \boldsymbol{F} \cdot [\boldsymbol{I} + \boldsymbol{T}] \cdot \boldsymbol{P} \cdot \boldsymbol{V} \cdot \boldsymbol{L}]^{-1}. \tag{11}$$

Given this, the structure of the production can be described by constructing two indices of dispersion namely index of power of dispersion and index of sensitivity of dispersion (Rasmussen 1956). The index of the power of dispersion presents the normalized backward linkages and indicates the relative extent to which an increase in final demand for the products of industry j is dispersed throughout the system of industries. In other words, it gives the total value of output, driven by a change in the final demand for good j, compared to what happen on average in all the sectors of the economy. Whereas, the index of sensitivity of dispersion gives the normalized forward linkages and appreciates the extent to which industry i is affected by an expansion in the system of industries. The index of the power of dispersion, $\pi_{.j}$, can be defined mathematically as follows:

$$\pi_{.j} = \frac{\frac{1}{n} \cdot r_{.j}}{\frac{1}{n^2} \cdot \sum_{j=1}^{n} r_{.j}} \tag{12}$$

where $r_{.j}$ is the jth sector's backward linkage, $\sum_{j=1}^{n} r_{.j}$ is the sum of all backward linkages and n is the total number of commodities. Likewise, the index of the sensitivity of dispersion,$\tau_{i.}$, is defined as:

$$\tau_{i.} = \frac{\frac{1}{n} \cdot r_{i.}}{\frac{1}{n^2} \cdot \sum_{i=1}^{n} r_{i.}} \tag{13}$$

where $r_{i.}$ is the ith sector's forward linkage, $\sum_{i=1}^{n} r_{i.}$ is the sum of all forward linkages and n is the total number of commodities.

The exigency to identify optimal or convenient policies to the economic policy objectives, imposes to go more in deep in the analysis using the mathematical tool of the singular value decomposition (Lancaster and Tiesmenetsky 1985).

For this purpose, the structural matrix **R,** in Eq. (11), can be decomposed in three different matrices (Ciaschini et al. 2009; Socci et al. 2014):

$$\mathbf{R} = \mathbf{U} \cdot \mathbf{S} \cdot \mathbf{Q}^{-1} \tag{14}$$

where **U** and **Q** are two (unitary) matrices (as they are unitary, by definition the inverses of these matrices exist and they are equal to the conjugate transposes) and **S** is a diagonal matrix whose diagonal entries are ordered in descending order. Substituting the Eqs. (11) and (14) in Eq. (10), we obtain:

$$\mathbf{x} = \mathbf{U} \cdot \mathbf{S} \cdot \boldsymbol{Q}^{-1} \cdot (\mathbf{f}^0 - \mathbf{m}) \tag{15}$$

and thus:

$$\mathbf{x}^* = \mathbf{S} \cdot \mathbf{f}^* \tag{16}$$

where $\mathbf{x}^* = \mathbf{U}^{-1} \cdot \mathbf{x}$ and $\mathbf{f}^* = \boldsymbol{Q}^{-1} \cdot (\boldsymbol{f}^0 - \mathbf{m})$.

The scalars in the diagonal of **S** can be conceived as "macro multipliers". In other words, as the final demand vectors approach a structure in **Q**, the vector of total output crosses the corresponding structure in **U,** and the ratio between the moduli of the two vectors is given by the corresponding scalar $\boldsymbol{s}$. Singular values $\mathbf{s_i}$ then determine the aggregated effect of a final demand shock on output and for this reason it is called a macro multiplier effect.

4 The power and dispersion analysis for Nigeria

From the detailed disaggregation of activities, commodities and institutional sectors provided by the SAM for Nigeria we can determine the relevance of each production process and arrange all commodities according to their ranks in power and sensitivity of dispersion. Figure 2 shows the ranking of commodities in the index of power of dispersion. The commodities with indices above one have strong backward linkages, whereas the commodities with indices less than one, have weak backward linkages. The unity is the average value of the index. From Fig. 2 we can see that the agriculture commodity 'forestry' ranks highest with index value 1.25. Other agriculture commodities with an index above one are 'fish-unprocessed-capture',

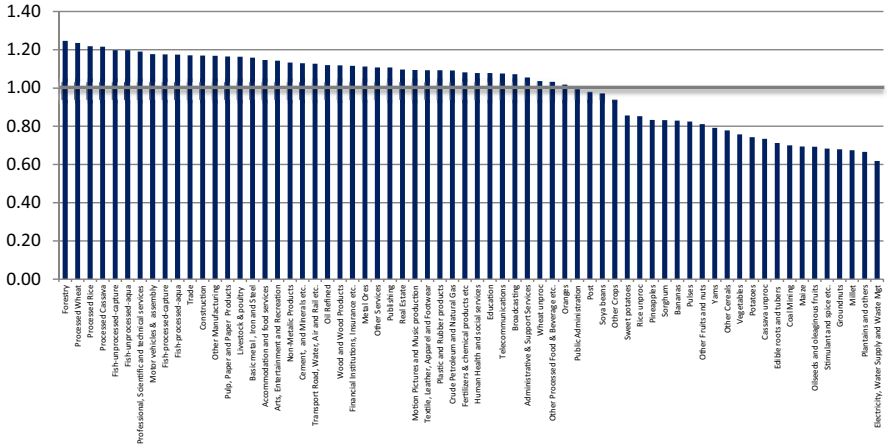

Fig. 2 Indexes of the power of dispersion (backward linkages)

'fish-unprocessed-aquaculture', 'live stock and poultry', 'wheat unprocessed' and 'oranges'. On the other hand, several other agriculture commodities lie below the average index; however, these commodities are very close to the unity. The results of the power of dispersion analysis for Nigerian agricultural sectors shows similarities with the production structure of Egypt and Morocco, and differences with the structure of Zambia agricultural production as identified by Soofi (1992). However, these studies provide limited information since they use only input–output tables and agriculture is an aggregate sector. Moreover, the results are also different compared to the results of Matallah and Proops (1992) for the Algerian economy, presenting weak backward linkages of agricultural sectors. This implies that the structure of production of different African economies is different, with reference to the agriculture sector.

The index of sensitivity of dispersion is portrayed in Fig. 3 with the commodities arranged according to the rankings. The highest ranked commodity is 'telecommunications', with the index value of 7.31. On the other hand, agriculture commodities that lie above the unitary value are: 'Yams' and 'Vegetables' with the index values 3.30 (rank 7) and 2.30 (rank 11) respectively. The rest of the agricultural commodities lie below the unitary value.

The findings of forward linkages identify only two agriculture commodities with strong linkages while the other agriculture commodities have weak linkages.

5 Empirical analysis of Macro Multiplier approach

Following the structure of the Nigerian SAM for 2010, the matrix **R** undergoes singular value decomposition and gives the 66 singular values, also called the macro-multipliers MM (see Table 4). It is obvious that the s_1 (MM_1) is the dominating multiplier because of its magnitude (i.e. 52.93). This implies that a shock on final demand vector produces a change on the output vector 52.93 times

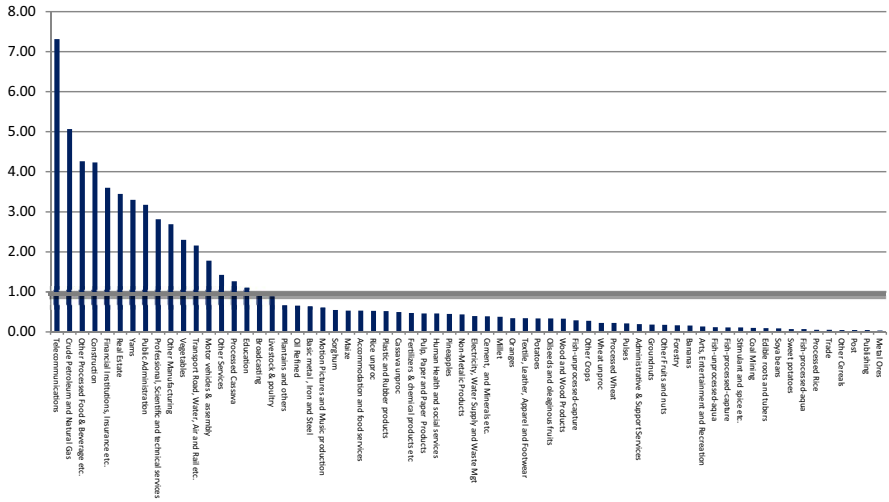

Fig. 3 Indexes of the sensitivity of dispersion (forward linkages)

greater. Similarly, the table shows that MM from s_2 to s_{49} amplify the effect of the shock, whereas the MM from s_{53} to s_{66} reduce the effect. The s_{51} and s_{52} do no generate any effect.

It is easy to plot the graphs of input structures q_i, which activate the MM s_i and the corresponding effect on industrial output. As we already said, there are 66 structures, but we decided to display only the first 2 structures, that show the highest impact on total output as showed in Fig. 4a, b. The information derived from these graphs can help devising the demand policies to be consistent with the observed and controlled structures of the inter-industry interactions.

Table 5 presents the total impact on the ith output ($\mathbf{x}$) of a unitary shock on final demand ($\mathbf{f}$) and the total effect on ith output of a final demand shock according to the structure 1 of the policy. This policy structure is the strongest in terms of magnitude (the detailed matrices are presented in Appendix B in Tables 7 and 8) and allows the economy to reach the highest performance. All other multipliers produce, comparatively, a lower effect in terms of industrial outputs. From Table 5, we can see the amplifying effect of a policy orientated to agricultural sectors and can compare it with the effect of a unitary final demand shock.

Since the Nigerian Government is particularly sensitive to policy measures supporting agriculture, because of the high number of employed in this sector and the expected positive results in terms of food security, we consider a final demand shock on agricultural sectors. This shock can be seen as the increase in government expenditure to sustain the production, the employment, and thus the income generation of agricultural sectors. In Fig. 5, the benchmark output change refers to the impact of a unitary final demand change of total agricultural output, while the output change with the first structure of final demand is the amplifying effect based on the macro multiplier s_1. It is clear from the figure that the macro

Table 4 Macro Multipliers based on R matrix

s_1	52.93	s_{23}	1.22	s_{45}	1.04
s_2	2.71	s_{24}	1.22	s_{46}	1.03
s_3	2.38	s_{25}	1.21	s_{47}	1.02
s_4	1.77	s_{26}	1.20	s_{48}	1.02
s_5	1.69	s_{27}	1.19	s_{49}	1.02
s_6	1.56	s_{28}	1.19	s_{50}	1.01
s_7	1.54	s_{29}	1.18	s_{51}	1.00
s_8	1.54	s_{30}	1.16	s_{52}	1.00
s_9	1.50	s_{31}	1.16	s_{53}	0.99
s_{10}	1.41	s_{32}	1.14	s_{54}	0.99
s_{11}	1.39	s_{33}	1.13	s_{55}	0.98
s_{12}	1.38	s_{34}	1.13	s_{56}	0.97
s_{13}	1.37	s_{35}	1.11	s_{57}	0.94
s_{14}	1.36	s_{36}	1.10	s_{58}	0.93
s_{15}	1.35	s_{37}	1.10	s_{59}	0.92
s_{16}	1.34	s_{38}	1.09	s_{60}	0.90
s_{17}	1.33	s_{39}	1.08	s_{61}	0.89
s_{18}	1.32	s_{40}	1.06	s_{62}	0.88
s_{19}	1.31	s_{41}	1.06	s_{63}	0.85
s_{20}	1.25	s_{42}	1.05	s_{64}	0.77
s_{21}	1.23	s_{43}	1.05	s_{65}	0.73
s_{22}	1.23	s_{44}	1.04	s_{66}	0.47

multiplier analysis gives the most optimistic, achievable results in terms of magnitude, which are not warranted in the traditional Leontief multipliers analysis.

In other words, choosing the policy structure, that is able to activate the highest macro multiplier, generates a higher impact on total output by sector than a simple uniform measure. This outcome is particularly interesting because it provides valuable policy suggestions to the policy maker when implementing policy measures. In particular, when the policy maker, in this case the Nigerian Government, has a priority represented by agricultural sectors, it can select the structure of the final demand shock among the possible structures that achieves the best result in terms of agricultural output.

6 Conclusion

The production of agricultural goods is included in the inter-industry relations, as well as the other commodities, since it is connected to the other production processes through the absorption of intermediate goods. Its relevance in Nigerian economy in particular, derives from its strong ability in activating other production processes (*backward looking*) when its final demand receives a stimulus. However, some agricultural goods are less important if we consider their capacity to generate incomes (*forward looking*). In particular, the forward linkage analysis

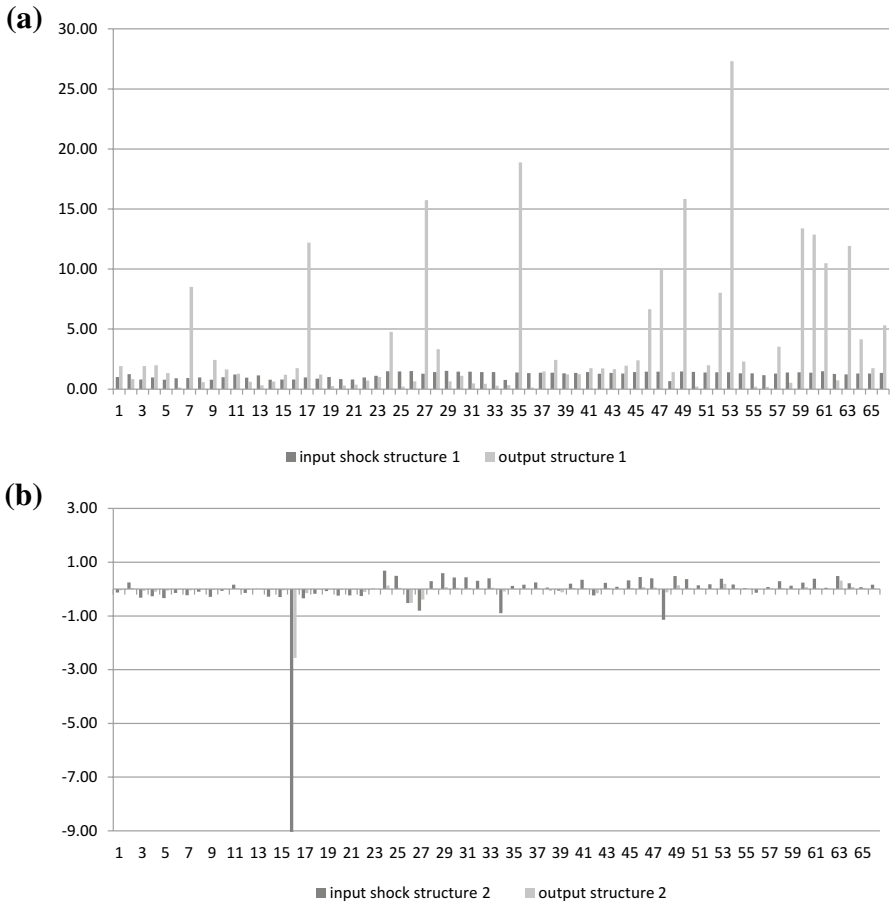

Fig. 4 **a** Structure 1 of demand shocks and its impact on output composition. **b** Structure 2 of demand shocks and its impact on output composition

predicts only two agricultural commodities, namely 'Yams' and 'Vegetables', with high index value, while the rest of agricultural goods lies below the index value and shows a weak forward linkage.

This preliminary analysis allows us to understand that financing the production of selected agricultural sectors can be essential, because they are able to activate the production processes connected to it. Moreover, when the analysis is conducted in a general framework, that considers the allocation of primary income and the secondary income distribution to determine disposable income, the results of the analysis could show even a stronger role of these commodities. Indeed, the role of agricultural production could change in terms of backward and forward look because of the multiplication processes related to institutional sectors' behavior in terms of consumption and saving propensities and, thus, in terms of investments.

Table 5 Final demand effect on total output

Effect on total output of a unitary final demand shock				Effect on total output of a final demand as per structure 1			
x1	15.58	x34	150.28	x1	19.10	x34	3.30
x2	6.71	x35	1.00	x2	8.35	x35	188.69
x3	15.81	x36	11.55	x3	19.21	x36	1.45
x4	16.38	x37	19.56	x4	19.91	x37	14.67
x5	11.15	x38	10.25	x5	13.42	x38	24.32
x6	1.37	x39	9.85	x6	1.42	x39	12.36
x7	68.13	x40	13.82	x7	85.15	x40	12.53
x8	4.88	x41	14.14	x8	5.75	x41	17.48
x9	19.76	x42	13.08	x9	24.35	x42	17.24
x10	13.37	x43	15.47	x10	16.43	x43	16.62
x11	10.31	x44	18.90	x11	12.82	x44	19.42
x12	5.25	x45	52.74	x12	6.19	x45	23.89
x13	2.65	x46	79.72	x13	3.10	x46	66.48
x14	5.40	x47	79.72	x14	6.29	x47	100.50
x15	9.99	x48	11.80	x15	11.92	x48	14.13
x16	14.87	x49	125.61	x16	17.44	x49	158.40
x17	97.80	x50	1.67	x17	121.94	x50	2.18
x18	10.00	x51	15.67	x18	12.22	x51	19.93
x19	2.20	x52	63.96	x19	2.37	x52	80.34
x20	2.83	x53	216.80	x20	3.17	x53	273.14
x21	3.39	x54	18.15	x21	3.80	x54	22.90
x22	6.33	x55	1.52	x22	7.14	x55	1.84
x23	8.18	x56	1.53	x23	10.14	x56	1.70
x24	37.63	x57	28.04	x24	47.61	x57	35.25
x25	1.63	x58	4.02	x25	2.23	x58	5.22
x26	6.65	x59	106.69	x26	6.44	x59	133.95
x27	126.41	x60	102.27	x27	157.38	x60	128.68
x28	26.55	x61	83.37	x28	33.21	x61	104.80
x29	4.87	x62	5.90	x29	6.47	x62	7.41
x30	8.65	x63	94.09	x30	11.10	x63	119.36
x31	3.60	x64	32.72	x31	4.71	x64	41.50
x32	3.45	x65	13.75	x32	4.32	x65	17.46
x33	2.11	x66	42.28	x33	2.82	x66	53.19
$\sum x_i = 1957.10$				$\sum x_i = 2448.30$			

This study differs from the existing literature because the analysis on the characteristics of Nigerian production processes is based on the SAM database that shows the entire process of production, income generation, income distribution among primary factors and among Institutional Sectors to determine the final demand. This dataset is fundamental for developing the extended input–output model, in which the final demand becomes mostly endogenous (only exports are considered exogenous),

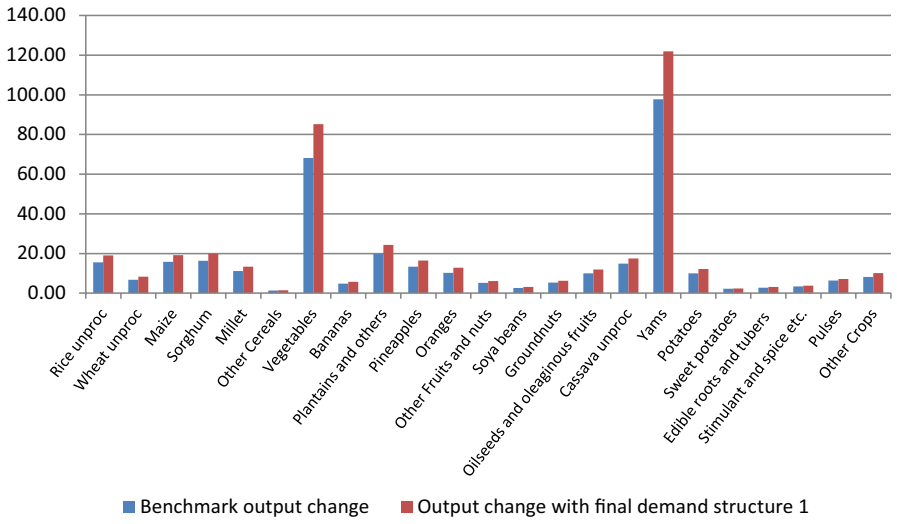

Fig. 5 Effects of final demand shock on agricultural output

and for determining the backward and forward dispersion analysis. This latter, identify the most relevant agricultural productions and while the macro multiplier analysis gives the relationship between the policy instrument, that is the final demand shock, and the policy control, that is to say the total output of agricultural sectors. The findings of the macro-multiplier approach prove that the final demand structures obtained from the singular value decomposition, give the optimal achievable results in terms of magnitude, overcoming the limits of the traditional Leontief multipliers analysis.

This is a preliminary study, but it permits to identify some potential in the Nigerian policy design that in latest years is more focused on agricultural sectors. Unfortunately, the official data available for the Nigerian economy allowed the disaggregation of national production processes but could not cover the spatial (e.g. regional) distribution of activities, and thus the disparities amongst regions in production and income allocation. This target could be achieved in future development of the study that would aim at social and poverty aspects, through a more intense collection of data from other official sources.

Appendix A: Commodities and activities classification

See Table 6.

Table 6 Commodities and activities in the Nigeria SAM for 2010

Agriculture	
1	Rice unprocessed
2	Wheat unprocessed
3	Maize
4	Sorghum
5	Millet
6	Other cereals
7	Vegetables
8	Bananas
9	Plantains and others
10	Pineapples
11	Oranges
12	Other fruits and nuts
13	Soya beans
14	Groundnuts
15	Oilseeds and oleaginous fruits
16	Cassava unprocessed
17	Yams
18	Potatoes
19	Sweet potatoes
20	Edible roots and tubers
21	Stimulant, spice and aromatic crops, n.e.c.
22	Pulses
23	Other crops
24	Livestock, poultry, meat and animal products
25	Forestry
26	Fisheries unprocessed capture
27	Fisheries unprocessed aqua
Manufacturing	
28	Processed cassava
29	Processed rice
30	Processed wheat
31	Other processed food, beverage and tobacco
32	Processed fisheries capture
33	Processed fisheries aqua
34	Cement, stone, plastic, quarrying and other minerals
35	Oil refining
36	Textile, leather, apparel and footwear
37	Wood and wood products
38	Pulp, paper and paper products
39	Fertilizers, pesticides, chemical and pharmaceutical products
40	Non-metallic products
41	Plastic and rubber products

Table 6 (continued)

42	Basic metal, iron and steel
43	Motor vehicles and assembly
44	Other manufacturing
Mining	
45	Coal mining
46	Crude petroleum and natural gas
47	Metal ores
Services	
48	Electricity, water supply and waste mgt
49	Construction
50	Trade
51	Accommodation and food services
52	Transport road, water, air and rail etc.
53	Telecommunications
54	Motion pictures, sound recording and music production
55	Publishing
56	Post
57	Broadcasting
58	Arts, entertainment and recreation
59	Financial institutions, insurance etc.
60	Real estate
61	Professional, scientific and technical services
62	Administrative and support services
63	Public administration
64	Education
65	Human health and social services
66	Other services

Appendix B

See Tables 7 and 8.

Table 7 Direct and indirect effects of a unitary demand shock on total output by commodity

	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17
x1	1.54	0.22	0.15	0.18	0.15	0.17	0.16	0.18	0.15	0.18	0.21	0.17	0.20	0.15	0.15	0.15	0.17
x2	0.07	1.42	0.05	0.07	0.05	0.06	0.06	0.07	0.05	0.07	0.08	0.06	0.08	0.05	0.05	0.05	0.06
x3	0.19	0.23	1.25	0.19	0.16	0.18	0.17	0.19	0.16	0.19	0.22	0.18	0.21	0.16	0.16	0.16	0.18
x4	0.20	0.22	0.17	1.57	0.17	0.18	0.18	0.19	0.17	0.19	0.22	0.19	0.22	0.17	0.17	0.17	0.19
x5	0.13	0.15	0.11	0.13	1.21	0.12	0.12	0.13	0.11	0.13	0.15	0.13	0.15	0.11	0.11	0.11	0.12
x6	0.00	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
x7	0.85	1.05	0.70	0.83	0.68	0.79	1.92	0.84	0.67	0.84	1.02	0.82	0.97	0.68	0.69	0.69	0.80
x8	0.05	0.06	0.04	0.04	0.04	0.04	0.04	1.27	0.04	0.05	0.06	0.04	0.05	0.04	0.04	0.04	0.04
x9	0.24	0.30	0.19	0.23	0.19	0.22	0.21	0.23	1.20	0.23	0.29	0.23	0.27	0.19	0.19	0.19	0.22
x10	0.15	0.19	0.12	0.15	0.12	0.14	0.14	0.15	0.12	1.37	0.19	0.15	0.17	0.12	0.12	0.12	0.14
x11	0.11	0.14	0.09	0.11	0.09	0.10	0.10	0.11	0.09	0.11	1.67	0.11	0.13	0.09	0.09	0.09	0.10
x12	0.05	0.06	0.04	0.05	0.04	0.05	0.05	0.05	0.04	0.05	0.06	1.26	0.06	0.04	0.04	0.04	0.05
x13	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	1.56	0.01	0.01	0.01	0.01
x14	0.06	0.07	0.04	0.05	0.04	0.05	0.05	0.05	0.04	0.05	0.07	0.05	0.07	1.14	0.04	0.04	0.05
x15	0.11	0.14	0.09	0.11	0.08	0.10	0.10	0.11	0.08	0.11	0.14	0.11	0.13	0.09	1.41	0.09	0.10
x16	0.15	0.19	0.12	0.15	0.12	0.14	0.14	0.15	0.12	0.15	0.19	0.15	0.18	0.12	0.12	2.80	0.14
x17	1.25	1.51	1.05	1.22	1.02	1.16	1.13	1.23	1.01	1.23	1.47	1.20	1.41	1.03	1.04	1.03	2.37
x18	0.11	0.14	0.09	0.11	0.09	0.10	0.10	0.11	0.09	0.11	0.14	0.11	0.13	0.09	0.09	0.09	0.11
x19	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x20	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02
x21	0.03	0.04	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.04	0.03	0.04	0.02	0.02	0.02	0.03
x22	0.08	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.08	0.08	0.08
x23	0.09	0.11	0.07	0.08	0.07	0.08	0.08	0.08	0.07	0.09	0.10	0.08	0.10	0.07	0.07	0.07	0.08
x24	0.46	0.57	0.37	0.44	0.36	0.42	0.41	0.45	0.36	0.45	0.55	0.44	0.52	0.36	0.37	0.36	0.42

Table 7 (continued)

	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17
x25	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01
x26	0.12	0.01	0.20	0.13	0.21	0.15	0.16	0.13	0.21	0.13	0.04	0.14	0.11	0.21	0.20	0.20	0.14
x27	1.63	1.93	1.39	1.59	1.35	1.52	1.48	1.60	1.34	1.60	1.88	1.57	1.83	1.36	1.37	1.36	1.54
x28	0.33	0.39	0.28	0.32	0.27	0.30	0.30	0.32	0.27	0.32	0.38	0.32	0.37	0.27	0.27	0.27	0.31
x29	0.05	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.05	0.04	0.05	0.04	0.04	0.04	0.04
x30	0.10	0.12	0.08	0.09	0.07	0.09	0.08	0.09	0.07	0.09	0.12	0.09	0.11	0.07	0.08	0.08	0.09
x31	0.03	0.04	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.04	0.03	0.04	0.02	0.03	0.03	0.03
x32	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.03
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x34	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02
x35	1.86	2.31	1.49	1.81	1.44	1.70	1.65	1.82	1.43	1.83	2.26	1.77	2.14	1.45	1.47	1.46	1.73
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
x37	0.13	0.17	0.11	0.13	0.10	0.12	0.12	0.13	0.10	0.13	0.16	0.13	0.15	0.10	0.10	0.10	0.12
x38	0.23	0.26	0.21	0.23	0.20	0.22	0.22	0.23	0.20	0.23	0.26	0.23	0.26	0.20	0.20	0.20	0.22
x39	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.13	0.13	0.13	0.13
x40	0.11	0.13	0.09	0.10	0.08	0.10	0.09	0.10	0.08	0.10	0.13	0.10	0.12	0.08	0.09	0.08	0.10
x41	0.16	0.20	0.13	0.16	0.13	0.15	0.14	0.16	0.13	0.16	0.19	0.15	0.18	0.13	0.13	0.13	0.15
x42	0.17	0.17	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.17	0.16	0.20	0.15	0.15	0.17	0.16
x43	0.15	0.18	0.12	0.14	0.11	0.13	0.13	0.14	0.11	0.14	0.18	0.14	0.17	0.11	0.12	0.12	0.14
x44	0.18	0.22	0.14	0.17	0.14	0.16	0.16	0.17	0.14	0.18	0.22	0.17	0.21	0.14	0.14	0.14	0.17
x45	0.23	0.28	0.19	0.22	0.18	0.21	0.20	0.22	0.18	0.22	0.27	0.22	0.26	0.18	0.19	0.18	0.21
x46	0.65	0.82	0.52	0.64	0.51	0.60	0.58	0.64	0.50	0.64	0.80	0.62	0.80	0.51	0.51	0.51	0.60
x47	0.99	1.23	0.80	0.96	0.77	0.91	0.88	0.96	0.76	0.97	1.19	0.94	1.13	0.78	0.79	0.79	0.92
x48	0.13	0.16	0.11	0.13	0.10	0.12	0.12	0.13	0.10	0.13	0.16	0.13	0.15	0.10	0.11	0.10	0.12

Table 7 (continued)

	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17
x49	1.57	1.97	1.26	1.53	1.22	1.43	1.39	1.53	1.21	1.54	1.91	1.50	1.80	1.22	1.24	1.23	1.46
x50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x51	0.19	0.23	0.15	0.18	0.14	0.17	0.16	0.18	0.14	0.18	0.23	0.18	0.21	0.14	0.14	0.14	0.17
x52	0.80	0.98	0.65	0.78	0.63	0.73	0.71	0.78	0.62	0.78	0.96	0.76	0.91	0.63	0.64	0.64	0.74
x53	2.73	3.45	2.16	2.65	2.09	2.49	2.40	2.67	2.08	2.68	3.34	2.60	3.14	2.11	2.13	2.12	2.53
x54	0.22	0.27	0.17	0.21	0.17	0.20	0.19	0.21	0.16	0.21	0.26	0.21	0.25	0.17	0.17	0.17	0.20
x55	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
x56	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01
x57	0.35	0.44	0.27	0.34	0.26	0.31	0.30	0.34	0.26	0.34	0.43	0.33	0.41	0.26	0.26	0.26	0.32
x58	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.04	0.03	0.03	0.03	0.03
x59	1.36	1.67	1.11	1.32	1.08	1.25	1.21	1.33	1.07	1.33	1.62	1.30	1.53	1.09	1.10	1.09	1.27
x60	1.29	1.62	1.01	1.25	0.98	1.17	1.13	1.26	0.97	1.26	1.59	1.22	1.49	0.99	1.00	0.99	1.19
x61	1.05	1.31	0.84	1.03	0.82	0.96	0.93	1.03	0.81	1.04	1.28	1.01	1.21	0.82	0.83	0.83	0.98
x62	0.06	0.08	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.08	0.06	0.07	0.05	0.05	0.05	0.06
x63	1.11	1.47	0.83	1.07	0.79	0.99	0.95	1.08	0.78	1.08	1.41	1.04	1.32	0.80	0.82	0.81	1.01
x64	0.38	0.50	0.29	0.37	0.28	0.35	0.33	0.37	0.28	0.38	0.48	0.36	0.45	0.29	0.29	0.29	0.35
x65	0.15	0.20	0.12	0.15	0.11	0.14	0.13	0.15	0.11	0.15	0.19	0.15	0.18	0.11	0.12	0.11	0.14
x66	0.52	0.63	0.42	0.50	0.41	0.47	0.46	0.50	0.40	0.51	0.62	0.49	0.59	0.41	0.41	0.41	0.48
Sum	25.26	30.70	20.55	24.61	19.97	23.06	22.44	24.56	19.72	24.66	30.17	24.05	28.89	20.08	20.53	21.78	23.43

	f18	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34
x1	0.16	0.18	0.16	0.15	0.18	0.22	0.25	0.25	0.26	0.30	0.34	0.26	0.25	0.25	0.25	0.25	0.16
x2	0.06	0.07	0.06	0.05	0.07	0.08	0.10	0.10	0.10	0.09	0.11	0.11	0.10	0.10	0.10	0.10	0.05
x3	0.17	0.19	0.17	0.16	0.19	0.21	0.26	0.26	0.26	0.25	0.28	0.27	0.26	0.26	0.25	0.25	0.18
x4	0.18	0.20	0.17	0.17	0.19	0.24	0.25	0.25	0.25	0.33	0.35	0.25	0.25	0.25	0.25	0.25	0.22

Table 7 (continued)

	f18	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34
x5	0.12	0.13	0.11	0.11	0.13	0.15	0.18	0.18	0.18	0.17	0.19	0.19	0.18	0.18	0.17	0.17	0.12
x6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
x7	0.75	0.86	0.72	0.69	0.83	0.95	1.23	1.27	1.29	1.05	1.22	1.32	1.24	1.24	1.21	1.21	0.62
x8	0.04	0.05	0.04	0.04	0.04	0.05	0.07	0.07	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.03
x9	0.21	0.24	0.20	0.19	0.23	0.27	0.35	0.36	0.36	0.29	0.34	0.37	0.35	0.35	0.34	0.34	0.17
x10	0.13	0.15	0.13	0.12	0.15	0.17	0.23	0.23	0.24	0.19	0.23	0.25	0.23	0.23	0.22	0.22	0.10
x11	0.10	0.11	0.09	0.09	0.11	0.12	0.16	0.17	0.17	0.14	0.16	0.17	0.16	0.16	0.16	0.16	0.08
x12	0.05	0.05	0.04	0.04	0.05	0.06	0.07	0.07	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.05
x13	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
x14	0.05	0.06	0.05	0.04	0.05	0.06	0.08	0.08	0.08	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.05
x15	0.10	0.11	0.09	0.09	0.11	0.12	0.16	0.16	0.16	0.13	0.16	0.16	0.16	0.16	0.16	0.16	0.09
x16	0.13	0.16	0.13	0.12	0.15	0.17	0.23	0.24	0.24	0.20	0.23	0.25	0.23	0.23	0.22	0.22	0.10
x17	1.12	1.26	1.07	1.04	1.22	1.37	1.75	1.80	1.82	1.49	1.73	1.86	1.76	1.76	1.71	1.71	0.98
xl8	1.13	0.12	0.09	0.09	0.11	0.13	0.17	0.17	0.18	0.14	0.17	0.18	0.17	0.17	0.16	0.16	0.08
x19	0.01	1.21	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02
x20	0.02	0.02	1.06	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
x21	0.03	0.03	0.03	1.03	0.03	0.03	0.05	0.04	0.05	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.03
x22	0.08	0.08	0.08	0.08	1.25	0.08	0.06	0.06	0.05	0.08	0.06	0.05	0.06	0.06	0.07	0.07	0.15
x23	0.08	0.09	0.07	0.07	0.09	1.18	0.12	0.12	0.13	0.10	0.12	0.13	0.12	0.12	0.12	0.12	0.07
x24	0.40	0.46	0.38	0.37	0.44	0.51	2.46	0.69	0.70	0.55	0.66	0.72	0.67	0.67	0.65	0.65	0.31
x25	0.01	0.00	0.01	0.01	0.01	0.00	0.00	1.38	−0.01	0.00	−0.01	−0.01	0.00	0.00	0.00	0.00	0.03
x26	0.17	0.11	0.18	0.19	0.13	0.08	−0.09	−0.14	1.22	0.10	−0.13	−0.20	−0.10	−0.10	−0.06	−0.06	0.68
x27	1.47	1.64	1.42	1.37	1.59	1.78	2.20	2.24	2.27	3.40	2.16	2.30	2.21	2.21	2.17	2.17	1.51
x28	0.29	0.33	0.28	0.27	0.32	0.60	0.44	0.45	0.45	0.40	1.44	0.46	0.44	0.44	0.44	0.44	0.32

Table 7 (continued)

	f18	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34
x29	0.04	0.05	0.04	0.04	0.04	0.05	0.07	0.07	0.07	0.06	0.07	1.33	0.07	0.07	0.06	0.06	0.03
x30	0.08	0.10	0.08	0.08	0.09	0.11	0.14	0.15	0.15	0.12	0.17	0.15	1.19	0.14	0.14	0.14	0.06
x31	0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.05	0.04	0.06	0.05	0.05	1.10	0.05	0.05	0.02
x32	0.04	0.03	0.04	0.04	0.03	0.03	0.02	0.01	0.01	0.03	0.02	0.01	0.12	0.02	1.37	0.02	0.08
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.11	0.01	1.35	0.03
x34	0.02	0.03	0.02	0.02	0.02	0.03	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.04	1.02
x35	1.62	1.88	1.54	1.47	1.81	2.04	2.70	2.70	2.73	2.25	2.56	2.75	2.70	2.70	2.63	2.63	1.69
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
x37	0.11	0.13	0.11	0.10	0.13	0.15	0.20	0.20	0.21	0.16	0.19	0.21	0.20	0.20	0.19	0.19	0.09
x38	0.22	0.23	0.21	0.20	0.23	0.25	0.28	0.28	0.28	0.28	0.29	0.28	0.30	0.30	0.28	0.28	0.30
x39	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.11	0.15	0.11	0.11	0.12	0.12	0.13	0.13	0.24
x40	0.09	0.11	0.09	0.09	0.10	0.12	0.15	0.16	0.16	0.13	0.16	0.16	0.37	0.37	0.15	0.15	0.09
x41	0.14	0.16	0.14	0.13	0.16	0.18	0.23	0.24	0.24	0.19	0.23	0.25	0.24	0.24	0.23	0.23	0.13
x42	0.15	0.17	0.15	0.15	0.18	0.19	0.17	0.17	0.16	0.19	0.16	0.16	0.17	0.17	0.18	0.18	0.26
x43	0.13	0.15	0.12	0.12	0.14	0.16	0.22	0.22	0.23	0.18	0.22	0.23	0.22	0.22	0.21	0.21	0.10
x44	0.16	0.18	0.15	0.14	0.18	0.20	0.26	0.25	0.26	0.21	0.24	0.25	0.25	0.25	0.25	0.25	0.16
x45	0.20	0.23	0.19	0.19	0.22	0.25	0.32	0.33	0.34	0.27	0.32	0.35	0.34	0.34	0.32	0.32	0.16
x46	0.56	0.66	0.54	0.51	0.64	0.85	0.97	0.98	1.00	0.79	0.94	1.02	0.96	0.96	0.94	0.94	0.46
x47	0.86	1.01	0.82	0.79	0.96	1.14	1.46	1.50	1.53	1.21	1.43	1.54	1.46	1.46	1.43	1.43	0.72
x48	0.12	0.13	0.11	0.11	0.13	0.15	0.19	0.19	0.19	0.16	0.18	0.20	0.19	0.19	0.19	0.19	0.16
x49	1.36	1.59	1.30	1.25	1.52	1.75	2.34	2.41	2.45	1.91	2.31	2.51	2.35	2.35	2.27	2.27	1.04
x50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
x51	0.16	0.19	0.15	0.14	0.18	0.20	0.28	0.28	0.28	0.22	0.26	0.29	0.27	0.27	0.27	0.27	0.14
x52	0.70	0.81	0.67	0.64	0.78	0.88	1.15	1.16	1.18	0.97	1.10	1.19	1.14	1.14	1.12	1.12	0.65

Table 7 (continued)

	f18	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34
x53	2.36	2.77	2.25	2.14	2.65	3.03	4.08	4.15	4.22	3.31	3.95	4.29	4.04	4.04	3.96	3.96	1.89
x54	0.19	0.22	0.18	0.17	0.21	0.24	0.32	0.33	0.34	0.26	0.31	0.34	0.32	0.32	0.31	0.31	0.15
x55	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
x56	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
x57	0.30	0.35	0.28	0.27	0.34	0.38	0.52	0.50	0.51	0.42	0.47	0.50	0.49	0.49	0.50	0.50	0.30
x58	0.03	0.04	0.03	0.03	0.03	0.04	0.05	0.05	0.05	0.04	0.05	0.06	0.05	0.05	0.05	0.05	0.03
x59	1.20	1.37	1.15	1.10	1.32	1.49	1.94	1.99	2.02	1.62	1.91	2.06	1.94	1.94	1.90	1.90	1.00
x60	1.11	1.31	1.05	1.00	1.25	1.41	1.91	1.89	1.92	1.55	1.78	1.93	1.85	1.85	1.85	1.85	1.02
x61	0.92	1.07	0.87	0.83	1.02	1.15	1.53	1.52	1.54	1.26	1.46	1.55	1.49	1.49	1.49	1.49	0.86
x62	0.05	0.06	0.05	0.05	0.06	0.07	0.09	0.09	0.09	0.07	0.08	0.09	0.09	0.09	0.09	0.09	0.06
x63	0.93	1.13	0.87	0.82	1.07	1.28	1.79	1.86	1.89	1.44	1.76	1.94	1.81	1.81	1.74	1.74	0.76
x64	0.33	0.39	0.31	0.29	0.37	0.44	0.60	0.62	0.63	0.49	0.59	0.65	0.61	0.61	0.59	0.59	0.27
x65	0.13	0.16	0.12	0.12	0.15	0.17	0.24	0.25	0.25	0.20	0.23	0.25	0.24	0.24	0.23	0.23	0.12
x66	0.45	0.52	0.43	0.41	0.50	0.57	0.74	0.75	0.76	0.62	0.71	0.76	0.73	0.73	0.72	0.72	0.42
Sum	22.01	25.35	21.09	20.24	24.42	27.90	36.06	36.10	36.57	30.58	34.53	36.95	35.51	35.51	34.84	34.83	20.77

	f35	f36	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51	f52	f53
x1	0.23	0.24	0.24	0.23	0.23	0.23	0.24	0.23	0.24	0.23	0.24	0.25	0.24	0.15	0.24	0.24	0.26	0.24	0.23
x2	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.09	0.09	0.09	0.09	0.10	0.10	0.04	0.09	0.10	0.10	0.09	0.09
x3	0.24	0.25	0.25	0.24	0.24	0.24	0.25	0.24	0.25	0.24	0.25	0.25	0.25	0.17	0.25	0.25	0.25	0.25	0.24
x4	0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.24	0.24	0.24	0.25	0.25	0.25	0.21	0.25	0.25	0.27	0.24	0.24
x5	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.11	0.17	0.17	0.17	0.17	0.16
x6	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
x7	1.11	1.14	1.15	1.13	1.10	1.13	1.19	1.08	1.14	1.10	1.19	1.21	1.20	0.53	1.19	1.20	1.19	1.15	1.09
x8	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.03	0.06	0.07	0.06	0.06	0.06

Table 7 (continued)

	f35	f36	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51	f52	f53
x9	0.31	0.32	0.32	0.32	0.31	0.32	0.34	0.30	0.32	0.31	0.33	0.34	0.34	0.14	0.33	0.34	0.33	0.32	0.30
x10	0.20	0.21	0.21	0.21	0.20	0.21	0.22	0.20	0.21	0.20	0.22	0.22	0.22	0.08	0.22	0.22	0.22	0.21	0.20
x11	0.14	0.15	0.15	0.15	0.14	0.15	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.06	0.16	0.16	0.16	0.15	0.14
x12	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.04	0.07	0.07	0.07	0.07	0.07
x13	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02
x14	0.07	0.07	0.08	0.08	0.07	0.07	0.08	0.07	0.08	0.07	0.08	0.08	0.08	0.04	0.08	0.08	0.07	0.07	0.07
x15	0.14	0.14	0.15	0.15	0.14	0.15	0.16	0.14	0.15	0.14	0.16	0.16	0.16	0.08	0.15	0.16	0.15	0.15	0.14
x16	0.20	0.21	0.21	0.21	0.20	0.21	0.22	0.20	0.21	0.20	0.22	0.22	0.22	0.08	0.22	0.22	0.22	0.21	0.20
x17	1.60	1.63	1.64	1.62	1.58	1.62	1.70	1.55	1.63	1.57	1.69	1.72	1.71	0.85	1.69	1.71	1.67	1.64	1.56
x18	0.15	0.15	0.16	0.15	0.15	0.15	0.16	0.14	0.15	0.15	0.16	0.17	0.16	0.06	0.16	0.16	0.16	0.16	0.15
x19	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.02
x20	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
x21	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.02	0.04	0.05	0.04	0.04	0.04
x22	0.08	0.08	0.07	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.07	0.06	0.07	0.16	0.07	0.07	0.07	0.07	0.08
x23	0.11	0.11	0.12	0.12	0.12	0.11	0.12	0.21	0.12	0.30	0.12	0.12	0.12	0.06	0.12	0.12	0.12	0.12	0.11
x24	0.60	0.61	0.62	0.61	0.59	0.61	0.64	0.58	0.61	0.59	0.64	0.65	0.65	0.25	0.64	0.65	0.63	0.61	0.58
x25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.00
x26	0.06	0.03	0.01	0.04	0.08	0.04	−0.04	0.08	0.03	0.05	−0.03	−0.07	−0.05	0.80	−0.04	−0.05	0.16	0.02	0.10
x27	2.07	2.10	2.11	2.08	2.05	2.09	2.15	2.01	2.09	2.03	2.14	2.17	2.16	1.40	2.15	2.16	2.12	2.10	2.04
x28	0.42	0.42	0.43	0.42	0.41	0.42	0.44	0.46	0.42	0.46	0.43	0.44	0.44	0.30	0.43	0.44	0.43	0.42	0.41
x29	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.08	0.07	0.07	0.06	0.06	0.06	0.03	0.06	0.06	0.06	0.06	0.06
x30	0.13	0.13	0.13	0.13	0.12	0.13	0.14	0.12	0.13	0.13	0.14	0.14	0.14	0.05	0.14	0.14	0.13	0.13	0.12
x31	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.02	0.05	0.05	0.04	0.04	0.04
x32	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.09	0.02	0.02	0.02	0.03	0.03

Table 7 (continued)

	f35	f36	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51	f52	f53
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.01	0.01
x34	0.03	0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.02	0.04	0.04	0.03	0.03	0.03
x35	3.54	2.47	2.68	2.80	2.65	2.73	2.66	2.57	2.58	2.46	2.71	2.69	2.67	1.56	2.78	2.68	2.58	2.71	2.47
x36	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
x37	0.17	0.18	1.19	0.18	0.18	0.18	0.19	0.17	0.18	0.17	0.19	0.19	0.19	0.07	0.26	0.19	0.19	0.18	0.18
x38	0.29	0.35	0.36	1.35	0.32	0.40	0.29	0.36	0.47	0.39	0.29	0.29	0.29	0.30	0.31	0.29	0.31	0.30	0.29
x39	0.15	0.14	0.14	0.14	1.29	0.14	0.13	0.15	0.14	0.14	0.13	0.13	0.13	0.25	0.13	0.13	0.13	0.14	0.15
x40	0.14	0.14	0.14	0.14	0.14	1.20	0.15	0.13	0.14	0.14	0.15	0.15	0.15	0.08	0.16	0.15	0.14	0.14	0.14
x41	0.21	0.24	0.22	0.21	0.21	0.23	1.24	0.21	0.22	0.21	0.22	0.23	0.23	0.11	0.22	0.23	0.22	0.22	0.21
x42	0.19	0.19	0.19	0.23	0.19	0.19	0.18	1.57	0.19	0.30	0.18	0.18	0.18	0.27	0.18	0.18	0.18	0.19	0.19
x43	0.19	0.20	0.20	0.20	0.20	0.20	0.21	0.19	1.58	0.19	0.21	0.21	0.21	0.08	0.28	0.21	0.21	0.20	0.20
x44	0.23	0.23	0.24	0.24	0.23	0.24	0.26	0.34	0.24	1.57	0.25	0.26	0.26	0.14	0.25	0.26	0.25	0.26	0.22
x45	0.29	0.30	0.30	0.31	0.29	0.30	0.31	0.28	0.30	0.29	1.51	0.32	0.31	0.13	0.33	0.32	0.31	0.30	0.29
x46	0.87	0.91	0.89	0.88	0.87	0.88	0.94	0.84	0.89	0.86	0.92	1.95	0.94	0.38	0.92	0.95	0.91	0.89	0.84
x47	1.30	1.33	1.34	1.33	1.36	1.36	1.42	1.27	1.34	1.31	1.41	1.42	2.47	0.62	1.54	1.41	1.42	1.35	1.29
x48	0.17	0.22	0.18	0.18	0.17	0.18	0.20	0.19	0.18	0.18	0.19	0.19	0.19	1.17	0.19	0.19	0.18	0.18	0.17
x49	2.08	2.12	2.16	2.12	2.20	2.12	2.26	2.00	2.15	2.04	2.24	2.29	2.27	0.82	3.25	2.27	2.21	2.15	2.14
x50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.01	0.01	0.01	0.01
x51	0.24	0.25	0.26	0.25	0.24	0.25	0.27	0.23	0.25	0.24	0.26	0.27	0.27	0.11	0.26	0.27	1.32	0.25	0.23
x52	1.13	1.06	1.15	1.08	1.05	1.08	1.13	1.02	1.07	1.03	1.12	1.13	1.12	0.57	1.14	1.13	1.16	2.12	1.03
x53	3.60	3.67	3.75	3.70	3.53	3.68	3.96	3.45	3.73	3.52	3.88	4.02	3.98	1.51	3.91	4.00	3.83	3.72	4.62
x54	0.29	0.29	0.30	0.29	0.28	0.29	0.31	0.27	0.30	0.28	0.31	0.32	0.32	0.12	0.31	0.32	0.31	0.30	0.29
x55	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
x56	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01

Table 7 (continued)

	f35	f36	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51	f52	f53
x57	0.45	0.45	0.47	0.47	0.44	0.46	0.51	0.42	0.47	0.43	0.49	0.52	0.51	0.25	0.49	0.52	0.47	0.46	0.43
x58	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.05	0.05	0.05	0.05	0.05
x59	1.75	1.78	1.81	1.78	1.72	1.78	1.89	1.69	1.80	1.72	1.86	1.91	1.90	0.84	1.87	1.90	1.84	1.86	1.70
x60	1.69	1.69	1.76	1.75	1.64	1.72	1.88	1.59	1.75	1.62	1.82	1.91	1.89	0.85	1.82	1.91	1.77	1.76	1.73
x61	1.36	1.37	1.42	1.41	1.33	1.39	1.51	1.30	1.41	1.31	1.46	1.52	1.51	0.73	1.46	1.52	1.42	1.44	1.32
x62	0.08	0.09	0.08	0.09	0.08	0.08	0.09	0.08	0.09	0.08	0.09	0.09	0.09	0.05	0.09	0.09	0.08	0.08	0.08
x63	1.59	1.63	1.65	1.62	1.56	1.62	1.72	1.52	1.63	1.56	1.71	1.75	1.73	0.59	1.72	1.74	1.68	1.64	1.54
x64	0.54	0.55	0.56	0.55	0.53	0.55	0.58	0.52	0.55	0.53	0.58	0.59	0.59	0.22	0.58	0.59	0.57	0.57	0.52
x65	0.22	0.22	0.23	0.22	0.21	0.22	0.23	0.21	0.22	0.21	0.23	0.24	0.23	0.10	0.23	0.24	0.23	0.26	0.21
x66	0.68	0.93	0.77	0.69	0.70	0.70	0.72	0.66	0.69	0.66	0.71	0.73	0.73	0.37	0.74	0.73	0.71	0.72	0.67
Sum	32.30	32.99	33.49	33.18	32.41	33.13	34.51	32.08	33.59	32.45	34.33	34.82	34.66	18.32	34.63	34.73	33.99	33.40	31.90

	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	Sum	f
x1	0.23	0.23	0.21	0.23	0.24	0.24	0.24	0.25	0.23	0.21	0.23	0.23	0.23	15.58	1
x2	0.09	0.09	0.08	0.09	0.09	0.09	0.09	0.10	0.08	0.08	0.09	0.09	0.09	6.71	1
x3	0.24	0.24	0.23	0.24	0.25	0.25	0.25	0.26	0.24	0.23	0.24	0.24	0.25	15.81	1
x4	0.24	0.24	0.24	0.24	0.25	0.24	0.24	0.25	0.24	0.24	0.24	0.24	0.24	16.38	1
x5	0.17	0.17	0.15	0.16	0.17	0.17	0.17	0.18	0.16	0.15	0.16	0.16	0.17	11.15	1
x6	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	1.37	1
x7	1.12	1.12	0.99	1.08	1.17	1.14	1.14	1.24	1.07	0.99	1.09	1.09	1.13	68.13	1
x8	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.07	0.06	0.05	0.06	0.06	0.06	4.88	1
x9	0.31	0.31	0.28	0.30	0.33	0.32	0.32	0.35	0.30	0.28	0.31	0.31	0.32	19.76	1
x10	0.20	0.20	0.18	0.19	0.21	0.21	0.21	0.23	0.19	0.18	0.20	0.20	0.21	13.37	1
x11	0.15	0.15	0.13	0.14	0.15	0.15	0.15	0.16	0.14	0.13	0.14	0.14	0.15	10.31	1
x12	0.07	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.07	0.07	5.25	1

Table 7 (continued)

	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	Sum	f
x13	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	2.65	1
x14	0.07	0.07	0.06	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	5.40	1
x15	0.14	0.14	0.13	0.14	0.15	0.15	0.14	0.15	0.14	0.13	0.14	0.14	0.15	9.99	1
x16	0.20	0.20	0.18	0.19	0.21	0.21	0.21	0.23	0.19	0.18	0.20	0.20	0.21	14.87	1
x17	1.60	1.60	1.44	1.55	1.67	1.63	1.63	1.75	1.54	1.44	1.57	1.57	1.62	97.80	1
xl8	0.15	0.15	0.13	0.14	0.16	0.15	0.15	0.17	0.14	0.13	0.15	0.15	0.15	10.00	1
x19	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	2.20	1
x20	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	2.83	1
x21	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	3.39	1
x22	0.08	0.08	0.10	0.09	0.07	0.08	0.08	0.06	0.09	0.10	0.08	0.08	0.08	6.33	1
x23	0.11	0.15	0.10	0.11	0.12	0.11	0.11	0.12	0.11	0.10	0.11	0.13	0.11	8.18	1
x24	0.60	0.60	0.52	0.57	0.63	0.61	0.61	0.67	0.57	0.52	0.58	0.58	0.61	37.63	1
x25	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	1.63	1
x26	0.06	0.05	0.22	0.11	−0.01	0.03	0.03	−0.09	0.12	0.22	0.09	0.09	0.04	6.65	1
x27	2.07	2.06	1.93	2.02	2.13	2.10	2.10	2.21	2.02	1.93	2.04	2.04	2.09	126.41	1
x28	0.42	0.43	0.39	0.41	0.43	0.42	0.42	0.44	0.41	0.39	0.41	0.42	0.42	26.55	1
x29	0.06	0.07	0.05	0.06	0.06	0.06	0.06	0.07	0.06	0.05	0.06	0.06	0.06	4.87	1
x30	0.13	0.13	0.11	0.12	0.13	0.13	0.13	0.14	0.12	0.11	0.12	0.12	0.13	8.65	1
x31	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	3.60	1
x32	0.03	0.03	0.04	0.03	0.02	0.03	0.03	0.02	0.04	0.04	0.03	0.03	0.03	3.45	1
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	2.11	1
x34	0.06	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.03	3.01	1
x35	2.46	2.49	2.16	2.78	2.62	2.56	2.51	2.73	2.38	2.18	2.41	2.48	2.51	150.28	1
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1

Table 7 (continued)

	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	Sum	f
x37	0.18	0.17	0.15	0.17	0.18	0.18	0.18	0.20	0.17	0.15	0.17	0.17	0.18	11.55	1
x38	0.32	0.34	0.34	0.31	0.30	0.29	0.28	0.29	0.34	0.29	0.30	0.32	0.30	19.56	1
x39	0.14	0.14	0.17	0.15	0.14	0.14	0.14	0.12	0.15	0.17	0.15	0.15	0.14	10.25	1
x40	0.14	0.14	0.12	0.13	0.15	0.14	0.14	0.17	0.13	0.12	0.14	0.14	0.14	9.85	1
x41	0.21	0.22	0.21	0.20	0.23	0.22	0.21	0.23	0.22	0.19	0.23	0.21	0.21	13.82	1
x42	0.19	0.75	0.21	0.21	0.18	0.19	0.18	0.17	0.19	0.21	0.20	0.40	0.19	14.14	1
x43	0.19	0.19	0.17	0.19	0.20	0.20	0.20	0.22	0.19	0.17	0.19	0.19	0.20	13.08	1
x44	0.23	0.27	0.21	0.22	0.24	0.24	0.23	0.24	0.22	0.21	0.22	0.25	0.23	15.47	1
x45	0.29	0.29	0.26	0.28	0.31	0.30	0.30	0.32	0.28	0.26	0.30	0.29	0.30	18.90	1
x46	0.86	0.86	0.75	0.84	0.90	0.88	0.87	0.96	0.81	0.75	0.85	0.84	0.87	52.74	1
x47	1.30	1.32	1.22	1.25	1.39	1.35	1.32	1.45	1.24	1.14	1.31	1.30	1.32	79.72	1
x48	0.18	0.19	0.16	0.20	0.19	0.18	0.17	0.19	0.21	0.16	0.21	0.17	0.21	11.80	1
x49	2.09	2.07	1.81	2.00	2.19	2.13	2.13	2.33	1.98	1.81	2.04	2.03	2.12	125.61	1
x50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.67	1
x51	0.24	0.24	0.21	0.24	0.26	0.25	0.24	0.27	0.23	0.22	0.25	0.26	0.26	15.67	1
x52	1.05	1.04	0.94	1.04	1.14	1.07	1.05	1.13	1.01	0.93	1.02	1.02	1.06	63.96	1
x53	3.58	3.57	3.14	3.44	3.82	3.71	3.64	4.01	3.46	3.16	3.57	3.49	3.69	216.80	1
x54	1.29	0.28	0.25	0.27	0.31	0.29	0.29	0.32	0.28	0.25	0.29	0.28	0.29	18.15	1
x55	0.01	1.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.52	1
x56	0.01	0.01	1.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.53	1
x57	0.44	0.44	0.39	1.43	0.48	0.47	0.44	0.48	0.42	0.41	0.44	0.43	0.46	28.04	1
x58	0.12	0.05	0.04	0.05	1.14	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.07	4.02	1
x59	1.75	1.74	1.55	1.69	1.87	2.91	1.78	1.97	1.68	1.56	1.72	1.71	1.78	106.69	1
x60	1.68	1.68	1.50	1.62	1.79	1.73	2.69	2.00	1.60	1.50	1.64	1.63	1.72	102.27	1

Table 7 (continued)

	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	Sum	f
x61	1.37	1.33	1.21	1.31	1.48	1.40	1.36	2.57	1.41	1.23	1.37	1.39	1.43	83.37	1
x62	0.08	0.08	0.08	0.08	0.09	0.08	0.08	0.09	1.08	0.07	0.08	0.08	0.08	5.90	1
x63	1.60	1.59	1.38	1.53	1.68	1.63	1.64	1.80	1.51	2.80	1.56	1.55	1.62	94.09	1
x64	0.54	0.54	0.48	0.52	0.57	0.55	0.55	0.60	0.51	0.47	1.62	0.53	0.55	32.72	1
x65	0.22	0.22	0.19	0.27	0.23	0.22	0.22	0.24	0.20	0.19	0.21	1.22	0.22	13.75	1
x66	0.84	0.67	0.61	0.71	0.74	0.76	0.67	0.75	0.74	0.60	0.69	0.67	1.75	42.28	1
Sum	32.44	32.78	29.14	31.77	33.88	33.07	32.51	35.31	31.33	29.49	31.94	31.99	32.82	1957.10	66

Table 8 Direct and indirect effects of final demand shocks with the structure 1 on total output by commodity

	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17	f18
x1	1.54	0.27	0.12	0.17	0.12	0.15	0.15	0.17	0.11	0.18	0.26	0.17	0.23	0.12	0.12	0.12	0.17	0.14
x2	0.07	1.76	0.04	0.06	0.04	0.06	0.05	0.06	0.04	0.06	0.10	0.06	0.09	0.04	0.04	0.04	0.06	0.05
x3	0.19	0.28	1.01	0.18	0.12	0.16	0.16	0.18	0.12	0.19	0.27	0.18	0.25	0.13	0.13	0.13	0.18	0.15
x4	0.20	0.28	0.14	1.53	0.13	0.17	0.17	0.19	0.13	0.19	0.27	0.18	0.25	0.13	0.14	0.14	0.18	0.16
x5	0.13	0.19	0.09	0.12	0.94	0.11	0.11	0.12	0.08	0.13	0.18	0.12	0.17	0.09	0.09	0.09	0.12	0.10
x6	0.00	0.01	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
x7	0.86	1.31	0.56	0.81	0.53	0.72	1.76	0.82	0.52	0.83	1.24	0.78	1.11	0.54	0.55	0.55	0.78	0.66
x8	0.05	0.07	0.03	0.04	0.03	0.04	0.04	1.24	0.03	0.04	0.07	0.04	0.06	0.03	0.03	0.03	0.04	0.04
x9	0.24	0.37	0.16	0.23	0.15	0.20	0.20	0.23	0.93	0.23	0.35	0.22	0.31	0.15	0.15	0.15	0.22	0.18
x10	0.15	0.24	0.10	0.14	0.09	0.13	0.12	0.15	0.09	1.35	0.22	0.14	0.20	0.09	0.10	0.10	0.14	0.12
x11	0.11	0.17	0.07	0.11	0.07	0.09	0.09	0.11	0.07	0.11	2.03	0.10	0.14	0.07	0.07	0.07	0.10	0.08
x12	0.05	0.08	0.04	0.05	0.03	0.04	0.04	0.05	0.03	0.05	0.07	1.20	0.07	0.03	0.03	0.03	0.05	0.04
x13	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	1.78	0.01	0.01	0.01	0.01	0.01
x14	0.06	0.09	0.04	0.05	0.03	0.05	0.04	0.05	0.03	0.05	0.08	0.05	0.07	0.89	0.03	0.03	0.05	0.04
x15	0.11	0.17	0.07	0.11	0.07	0.09	0.09	0.11	0.07	0.11	0.16	0.10	0.15	0.07	1.13	0.07	0.10	0.08
x16	0.15	0.24	0.10	0.15	0.09	0.13	0.12	0.15	0.09	0.15	0.23	0.14	0.20	0.09	0.10	2.24	0.14	0.12
x17	1.26	1.88	0.85	1.19	0.80	1.06	1.04	1.20	0.79	1.21	1.78	1.15	1.61	0.80	0.82	0.82	2.31	0.97
x18	0.11	0.18	0.07	0.11	0.07	0.10	0.09	0.11	0.07	0.11	0.17	0.10	0.15	0.07	0.07	0.07	0.10	0.98
x19	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
x20	0.02	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
x21	0.03	0.05	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.05	0.03	0.04	0.02	0.02	0.02	0.03	0.02
x22	0.08	0.09	0.07	0.08	0.06	0.07	0.07	0.07	0.06	0.08	0.09	0.07	0.09	0.06	0.06	0.06	0.08	0.07
x23	0.09	0.13	0.06	0.08	0.05	0.07	0.07	0.08	0.05	0.08	0.13	0.08	0.11	0.05	0.06	0.06	0.08	0.07
x24	0.46	0.70	0.30	0.43	0.28	0.38	0.37	0.43	0.28	0.44	0.66	0.41	0.59	0.28	0.29	0.29	0.41	0.35

Table 8 (continued)

	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17	f18
x25	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x26	0.12	0.01	0.16	0.13	0.16	0.14	0.15	0.12	0.16	0.12	0.04	0.13	0.12	0.16	0.16	0.16	0.14	0.15
x27	1.64	2.39	1.12	1.56	1.06	1.39	1.36	1.56	1.05	1.58	2.28	1.49	2.09	1.07	1.09	1.09	1.50	1.28
x28	0.33	0.48	0.22	0.31	0.21	0.28	0.27	0.31	0.21	0.32	0.46	0.30	0.42	0.21	0.22	0.22	0.30	0.26
x29	0.05	0.07	0.03	0.04	0.03	0.04	0.04	0.04	0.03	0.04	0.07	0.04	0.06	0.03	0.03	0.03	0.04	0.03
x30	0.10	0.15	0.06	0.09	0.06	0.08	0.08	0.09	0.06	0.09	0.14	0.09	0.12	0.06	0.06	0.06	0.09	0.07
x31	0.03	0.05	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.05	0.03	0.04	0.02	0.02	0.02	0.03	0.02
x32	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x34	0.02	0.04	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.04	0.02	0.03	0.02	0.02	0.02	0.02	0.02
x35	1.87	2.87	1.21	1.77	1.13	1.55	1.51	1.77	1.11	1.80	2.73	1.69	2.45	1.14	1.17	1.17	1.69	1.41
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
x37	0.13	0.21	0.09	0.13	0.08	0.11	0.11	0.13	0.08	0.13	0.19	0.12	0.17	0.08	0.08	0.08	0.12	0.10
x38	0.23	0.32	0.17	0.22	0.16	0.20	0.20	0.22	0.16	0.23	0.31	0.21	0.30	0.16	0.16	0.16	0.22	0.19
x39	0.13	0.16	0.10	0.13	0.10	0.12	0.12	0.13	0.10	0.13	0.16	0.12	0.16	0.10	0.10	0.10	0.12	0.11
x40	0.11	0.16	0.07	0.10	0.07	0.09	0.09	0.10	0.06	0.10	0.15	0.10	0.14	0.07	0.07	0.07	0.10	0.08
x41	0.16	0.25	0.11	0.15	0.10	0.14	0.13	0.15	0.10	0.16	0.23	0.15	0.21	0.10	0.10	0.10	0.15	0.12
x42	0.17	0.21	0.13	0.16	0.12	0.14	0.14	0.15	0.12	0.16	0.21	0.15	0.23	0.12	0.12	0.13	0.15	0.13
x43	0.15	0.23	0.10	0.14	0.09	0.12	0.12	0.14	0.09	0.14	0.22	0.13	0.19	0.09	0.09	0.09	0.13	0.11
x44	0.18	0.27	0.12	0.17	0.11	0.15	0.15	0.17	0.11	0.17	0.26	0.16	0.24	0.11	0.11	0.11	0.16	0.14
x45	0.23	0.35	0.15	0.22	0.14	0.19	0.19	0.22	0.14	0.22	0.33	0.21	0.29	0.14	0.15	0.15	0.21	0.18
x46	0.66	1.02	0.42	0.62	0.39	0.54	0.53	0.62	0.39	0.63	0.96	0.59	0.91	0.40	0.41	0.41	0.59	0.49
x47	0.99	1.53	0.65	0.94	0.60	0.83	0.80	0.94	0.59	0.95	1.44	0.90	1.29	0.61	0.63	0.63	0.90	0.75
x48	0.13	0.20	0.09	0.13	0.08	0.11	0.11	0.13	0.08	0.13	0.19	0.12	0.18	0.08	0.08	0.08	0.12	0.10

Table 8 (continued)

	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17	f18
x49	1.58	2.45	1.01	1.49	0.95	1.31	1.27	1.50	0.94	1.52	2.31	1.43	2.05	0.96	0.99	0.99	1.42	1.19
x50	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01
x51	0.19	0.29	0.12	0.18	0.11	0.15	0.15	0.18	0.11	0.18	0.28	0.17	0.25	0.11	0.11	0.11	0.17	0.14
x52	0.80	1.22	0.52	0.76	0.49	0.67	0.65	0.76	0.49	0.77	1.16	0.73	1.04	0.50	0.51	0.51	0.73	0.61
x53	2.74	4.28	1.75	2.59	1.64	2.27	2.21	2.60	1.62	2.64	4.05	2.48	3.59	1.65	1.70	1.70	2.47	2.06
x54	0.22	0.34	0.14	0.21	0.13	0.18	0.17	0.21	0.13	0.21	0.32	0.20	0.28	0.13	0.13	0.13	0.20	0.16
x55	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
x56	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
x57	0.35	0.55	0.22	0.33	0.20	0.29	0.28	0.33	0.20	0.34	0.52	0.31	0.46	0.21	0.21	0.21	0.31	0.26
x58	0.04	0.06	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.05	0.03	0.05	0.02	0.02	0.02	0.03	0.03
x59	1.36	2.07	0.90	1.29	0.84	1.14	1.11	1.30	0.83	1.31	1.96	1.24	1.75	0.85	0.87	0.88	1.24	1.04
x60	1.30	2.01	0.82	1.22	0.76	1.06	1.04	1.23	0.76	1.24	1.92	1.17	1.71	0.77	0.79	0.79	1.16	0.97
x61	1.06	1.62	0.68	1.00	0.64	0.88	0.86	1.01	0.63	1.02	1.55	0.96	1.38	0.65	0.66	0.66	0.96	0.80
x62	0.06	0.10	0.04	0.06	0.04	0.05	0.05	0.06	0.04	0.06	0.09	0.06	0.08	0.04	0.04	0.04	0.06	0.05
x63	1.12	1.82	0.67	1.05	0.62	0.90	0.87	1.05	0.61	1.07	1.71	0.99	1.51	0.63	0.65	0.65	0.99	0.81
x64	0.39	0.62	0.24	0.36	0.22	0.31	0.30	0.36	0.22	0.37	0.58	0.35	0.52	0.22	0.23	0.23	0.34	0.28
x65	0.16	0.25	0.10	0.15	0.09	0.13	0.12	0.15	0.09	0.15	0.23	0.14	0.21	0.09	0.09	0.09	0.14	0.11
x66	0.52	0.79	0.34	0.49	0.32	0.43	0.42	0.49	0.31	0.50	0.75	0.47	0.67	0.32	0.33	0.33	0.47	0.39
Sum	25.37	38.13	16.62	24.08	15.62	21.03	20.60	23.97	15.37	24.28	36.49	22.90	33.02	15.78	16.34	17.47	22.92	19.21

	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34	f35	f36
x1	0.18	0.13	0.12	0.17	0.25	0.37	0.38	0.39	0.38	0.48	0.40	0.36	0.36	0.35	0.35	0.12	0.32	0.31
x2	0.07	0.05	0.04	0.06	0.09	0.15	0.15	0.15	0.12	0.16	0.16	0.14	0.14	0.14	0.14	0.04	0.12	0.12
x3	0.19	0.14	0.13	0.18	0.24	0.38	0.39	0.40	0.32	0.39	0.41	0.38	0.37	0.36	0.36	0.14	0.34	0.33
x4	0.20	0.14	0.13	0.19	0.26	0.37	0.37	0.38	0.42	0.49	0.39	0.36	0.36	0.35	0.35	0.17	0.34	0.33

Table 8 (continued)

	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34	f35	f36
x5	0.13	0.09	0.09	0.12	0.16	0.26	0.27	0.27	0.22	0.27	0.28	0.26	0.26	0.25	0.25	0.09	0.23	0.22
x6	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x7	0.87	0.60	0.55	0.81	1.05	1.83	1.88	1.94	1.35	1.74	2.02	1.81	1.80	1.71	1.71	0.48	1.54	1.52
x8	0.05	0.03	0.03	0.04	0.06	0.10	0.10	0.11	0.07	0.10	0.11	0.10	0.10	0.09	0.09	0.02	0.08	0.08
x9	0.24	0.17	0.15	0.23	0.29	0.52	0.53	0.55	0.37	0.49	0.57	0.51	0.51	0.48	0.48	0.13	0.43	0.43
x10	0.16	0.10	0.10	0.14	0.19	0.34	0.35	0.36	0.24	0.32	0.37	0.33	0.33	0.31	0.31	0.08	0.28	0.28
x11	0.11	0.08	0.07	0.10	0.14	0.24	0.25	0.25	0.18	0.23	0.26	0.24	0.24	0.22	0.22	0.06	0.20	0.20
x12	0.05	0.04	0.03	0.05	0.06	0.11	0.11	0.11	0.08	0.10	0.11	0.10	0.10	0.10	0.10	0.04	0.09	0.09
x13	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.02	0.02
x14	0.06	0.04	0.03	0.05	0.07	0.12	0.12	0.12	0.09	0.11	0.12	0.11	0.11	0.11	0.11	0.04	0.10	0.10
x15	0.11	0.08	0.07	0.10	0.14	0.24	0.24	0.24	0.17	0.23	0.25	0.23	0.23	0.22	0.22	0.07	0.20	0.19
x16	0.16	0.11	0.10	0.14	0.19	0.34	0.35	0.36	0.26	0.32	0.37	0.33	0.33	0.31	0.31	0.08	0.28	0.28
x17	1.27	0.89	0.82	1.18	1.53	2.60	2.66	2.74	1.92	2.46	2.84	2.56	2.55	2.43	2.43	0.75	2.21	2.17
x18	0.12	0.08	0.07	0.11	0.14	0.25	0.26	0.27	0.18	0.24	0.28	0.25	0.25	0.23	0.23	0.06	0.21	0.21
x19	1.22	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
x20	0.03	0.88	0.02	0.02	0.03	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.04	0.04	0.02	0.04	0.04
x21	0.03	0.02	0.81	0.03	0.04	0.07	0.07	0.07	0.05	0.06	0.07	0.06	0.06	0.06	0.06	0.02	0.06	0.05
x22	0.08	0.07	0.06	1.21	0.08	0.09	0.08	0.08	0.11	0.08	0.08	0.09	0.09	0.09	0.09	0.12	0.11	0.10
x23	0.09	0.06	0.06	0.08	1.31	0.18	0.18	0.19	0.14	0.17	0.20	0.18	0.18	0.17	0.17	0.06	0.16	0.15
x24	0.46	0.32	0.29	0.43	0.56	3.65	1.02	1.05	0.71	0.94	1.09	0.97	0.97	0.92	0.92	0.24	0.82	0.81
x25	0.00	0.01	0.01	0.01	0.00	−0.01	2.04	−0.01	0.01	−0.01	−0.01	−0.01	−0.01	0.00	0.00	0.02	0.00	0.00
x26	0.12	0.15	0.15	0.13	0.09	−0.14	−0.20	1.84	0.13	−0.19	−0.30	−0.14	−0.14	−0.08	−0.08	0.52	0.08	0.04
x27	1.65	1.18	1.09	1.54	1.97	3.26	3.32	3.41	4.38	3.07	3.51	3.21	3.21	3.08	3.08	1.16	2.85	2.80
x28	0.33	0.23	0.22	0.31	0.67	0.66	0.66	0.68	0.52	2.05	0.70	0.64	0.64	0.62	0.62	0.25	0.58	0.56

Table 8 (continued)

	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34	f35	f36
x29	0.05	0.03	0.03	0.04	0.06	0.10	0.10	0.10	0.07	0.09	2.03	0.10	0.10	0.09	0.09	0.02	0.08	0.08
x30	0.10	0.07	0.06	0.09	0.13	0.21	0.22	0.22	0.15	0.24	0.23	1.73	0.21	0.20	0.20	0.05	0.17	0.17
x31	0.03	0.02	0.02	0.03	0.04	0.07	0.07	0.07	0.05	0.08	0.08	0.07	1.59	0.07	0.07	0.02	0.06	0.06
x32	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.04	0.02	0.01	0.17	0.02	1.94	0.03	0.06	0.04	0.04
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.16	0.01	1.92	0.02	0.01	0.01
x34	0.03	0.02	0.02	0.02	0.03	0.05	0.06	0.06	0.04	0.05	0.06	0.05	0.05	0.05	0.05	0.78	0.05	0.04
x35	1.90	1.28	1.17	1.75	2.27	4.01	3.99	4.11	2.90	3.64	4.20	3.92	3.91	3.73	3.73	1.30	4.90	3.29
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34
x37	0.13	0.09	0.08	0.12	0.16	0.29	0.30	0.31	0.21	0.28	0.32	0.29	0.29	0.27	0.27	0.07	0.24	0.24
x38	0.24	0.17	0.16	0.22	0.28	0.42	0.41	0.42	0.36	0.42	0.42	0.44	0.44	0.40	0.40	0.23	0.40	0.47
x39	0.13	0.11	0.10	0.13	0.14	0.19	0.17	0.17	0.19	0.16	0.16	0.18	0.18	0.18	0.18	0.18	0.20	0.19
x40	0.11	0.07	0.07	0.10	0.13	0.23	0.23	0.24	0.16	0.22	0.24	0.54	0.54	0.21	0.21	0.07	0.19	0.19
x41	0.16	0.11	0.10	0.15	0.20	0.34	0.35	0.36	0.25	0.33	0.37	0.34	0.34	0.32	0.32	0.10	0.29	0.32
x42	0.17	0.13	0.12	0.17	0.21	0.26	0.24	0.24	0.24	0.23	0.24	0.25	0.25	0.25	0.25	0.20	0.26	0.25
x43	0.15	0.10	0.09	0.14	0.18	0.32	0.33	0.34	0.23	0.31	0.36	0.32	0.32	0.30	0.30	0.08	0.27	0.26
x44	0.18	0.12	0.11	0.17	0.22	0.38	0.37	0.38	0.28	0.34	0.39	0.36	0.36	0.36	0.35	0.13	0.32	0.31
x45	0.23	0.16	0.15	0.21	0.28	0.48	0.49	0.51	0.35	0.46	0.53	0.49	0.49	0.45	0.45	0.12	0.40	0.40
x46	0.66	0.45	0.41	0.62	0.95	1.43	1.45	1.50	1.02	1.33	1.55	1.39	1.39	1.33	1.33	0.36	1.20	1.21
x47	1.02	0.68	0.63	0.93	1.27	2.16	2.22	2.30	1.56	2.03	2.36	2.12	2.12	2.03	2.03	0.56	1.80	1.78
x48	0.14	0.09	0.08	0.13	0.16	0.29	0.28	0.29	0.21	0.26	0.30	0.27	0.27	0.27	0.27	0.12	0.24	0.29
x49	1.60	1.08	0.99	1.48	1.95	3.47	3.56	3.68	2.46	3.28	3.83	3.41	3.40	3.23	3.23	0.80	2.88	2.83
x50	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
x51	0.19	0.13	0.11	0.17	0.23	0.41	0.41	0.43	0.29	0.37	0.44	0.39	0.39	0.38	0.38	0.11	0.34	0.33
x52	0.81	0.55	0.51	0.75	0.97	1.70	1.71	1.77	1.26	1.57	1.82	1.66	1.66	1.59	1.59	0.50	1.56	1.42

Table 8 (continued)

	f19	f20	f21	f22	f23	f24	f25	f26	f27	f28	f29	f30	f31	f32	f33	f34	f35	f36
x53	2.79	1.86	1.70	2.57	3.37	6.06	6.14	6.34	4.26	5.62	6.55	5.88	5.87	5.63	5.62	1.45	4.98	4.89
x54	0.22	0.15	0.13	0.20	0.27	0.48	0.49	0.50	0.34	0.45	0.52	0.47	0.47	0.45	0.45	0.11	0.40	0.39
x55	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
x56	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
x57	0.36	0.23	0.21	0.33	0.42	0.77	0.74	0.76	0.54	0.66	0.77	0.71	0.71	0.71	0.71	0.23	0.63	0.60
x58	0.04	0.02	0.02	0.03	0.04	0.08	0.08	0.08	0.06	0.07	0.09	0.08	0.08	0.07	0.07	0.02	0.07	0.07
x59	1.38	0.95	0.87	1.28	1.66	2.89	2.94	3.04	2.09	2.72	3.14	2.83	2.82	2.69	2.69	0.77	2.42	2.38
x60	1.32	0.87	0.79	1.21	1.56	2.84	2.80	2.89	1.99	2.54	2.95	2.69	2.69	2.63	2.63	0.78	2.33	2.25
x61	1.08	0.73	0.66	0.99	1.28	2.27	2.25	2.31	1.62	2.07	2.36	2.16	2.16	2.11	2.11	0.66	1.89	1.83
x62	0.06	0.04	0.04	0.06	0.08	0.14	0.13	0.14	0.10	0.12	0.14	0.13	0.13	0.13	0.13	0.05	0.11	0.11
x63	1.14	0.72	0.65	1.04	1.42	2.66	2.75	2.84	1.86	2.51	2.96	2.63	2.62	2.48	2.47	0.58	2.20	2.18
x64	0.39	0.25	0.23	0.36	0.49	0.90	0.92	0.95	0.63	0.85	0.99	0.88	0.88	0.84	0.83	0.21	0.75	0.74
x65	0.16	0.10	0.09	0.14	0.19	0.36	0.36	0.38	0.25	0.33	0.39	0.35	0.35	0.33	0.33	0.09	0.31	0.29
x66	0.53	0.36	0.33	0.49	0.63	1.10	1.10	1.14	0.80	1.01	1.17	1.07	1.07	1.02	1.02	0.33	0.94	1.24
Sum	25.58	17.49	16.06	23.70	31.01	53.53	53.41	55.02	39.41	49.10	56.38	51.61	51.52	49.43	49.40	15.97	44.70	43.97

	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51
x1	0.33	0.32	0.30	0.32	0.35	0.29	0.32	0.30	0.34	0.36	0.36	0.10	0.36	0.35	0.36
x2	0.13	0.12	0.11	0.12	0.14	0.11	0.12	0.11	0.13	0.14	0.14	0.03	0.14	0.14	0.13
x3	0.34	0.33	0.32	0.33	0.36	0.30	0.33	0.31	0.35	0.37	0.37	0.11	0.37	0.36	0.35
x4	0.34	0.33	0.32	0.33	0.35	0.31	0.33	0.31	0.35	0.36	0.36	0.14	0.36	0.35	0.37
x5	0.23	0.23	0.22	0.23	0.25	0.21	0.23	0.21	0.24	0.26	0.25	0.07	0.26	0.25	0.24
x6	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
x7	1.58	1.55	1.45	1.54	1.70	1.39	1.55	1.43	1.67	1.77	1.75	0.35	1.76	1.72	1.65
x8	0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.08	0.09	0.10	0.10	0.02	0.10	0.09	0.09

Table 8 (continued)

	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51
x9	0.44	0.43	0.41	0.43	0.48	0.39	0.44	0.40	0.47	0.50	0.50	0.09	0.49	0.49	0.46
x10	0.29	0.28	0.26	0.28	0.31	0.26	0.28	0.26	0.31	0.32	0.32	0.05	0.32	0.31	0.30
x11	0.21	0.20	0.19	0.20	0.22	0.20	0.20	0.19	0.22	0.23	0.23	0.04	0.23	0.22	0.22
x12	0.09	0.09	0.09	0.09	0.10	0.09	0.09	0.09	0.10	0.10	0.10	0.03	0.10	0.10	0.10
x13	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.01	0.03	0.03	0.03
x14	0.10	0.10	0.09	0.10	0.12	0.09	0.10	0.09	0.11	0.12	0.12	0.03	0.11	0.12	0.10
x15	0.21	0.20	0.19	0.20	0.23	0.18	0.20	0.18	0.22	0.24	0.24	0.05	0.23	0.23	0.21
x16	0.29	0.28	0.26	0.28	0.31	0.25	0.28	0.26	0.31	0.33	0.32	0.05	0.32	0.32	0.30
x17	2.25	2.21	2.08	2.20	2.42	1.99	2.22	2.04	2.38	2.51	2.49	0.56	2.50	2.44	2.31
x18	0.21	0.21	0.19	0.21	0.23	0.19	0.21	0.19	0.23	0.24	0.24	0.04	0.24	0.23	0.22
x19	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02
x20	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.02	0.05	0.04	0.04
x21	0.06	0.06	0.05	0.06	0.06	0.05	0.06	0.05	0.06	0.07	0.07	0.01	0.06	0.06	0.06
x22	0.10	0.10	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.10	0.11	0.10	0.09	0.10
x23	0.16	0.16	0.15	0.16	0.17	0.27	0.16	0.39	0.17	0.18	0.18	0.04	0.18	0.17	0.16
x24	0.85	0.83	0.77	0.82	0.91	0.74	0.83	0.76	0.90	0.95	0.94	0.17	0.94	0.92	0.87
x25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01
x26	0.02	0.05	0.11	0.05	−0.06	0.11	0.03	0.06	−0.04	−0.10	−0.08	0.53	−0.05	−0.08	0.22
x27	2.89	2.84	2.70	2.83	3.06	2.58	2.85	2.63	3.03	3.17	3.15	0.92	3.17	3.09	2.94
x28	0.58	0.58	0.55	0.57	0.62	0.59	0.58	0.59	0.61	0.64	0.64	0.20	0.64	0.63	0.59
x29	0.08	0.08	0.08	0.09	0.09	0.10	0.09	0.09	0.09	0.09	0.09	0.02	0.09	0.09	0.09
x30	0.18	0.18	0.16	0.17	0.19	0.16	0.18	0.16	0.19	0.20	0.20	0.03	0.20	0.20	0.19
x31	0.06	0.06	0.05	0.06	0.06	0.05	0.06	0.05	0.06	0.07	0.07	0.01	0.07	0.07	0.06
x32	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.06	0.03	0.03	0.03

Table 8 (continued)

	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51
x33	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
x34	0.05	0.05	0.04	0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.01	0.05	0.05	0.05
x35	3.67	3.82	3.50	3.70	3.79	3.29	3.50	3.19	3.83	3.92	3.90	1.03	4.10	3.83	3.58
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
x37	1.63	0.24	0.24	0.24	0.27	0.22	0.24	0.22	0.27	0.28	0.28	0.05	0.39	0.27	0.26
x38	0.49	1.84	0.43	0.55	0.42	0.46	0.63	0.51	0.41	0.42	0.42	0.20	0.45	0.41	0.43
x39	0.19	0.20	1.70	0.19	0.19	0.19	0.19	0.18	0.19	0.19	0.19	0.17	0.20	0.19	0.18
x40	0.20	0.19	0.18	1.62	0.21	0.17	0.19	0.18	0.21	0.22	0.22	0.05	0.24	0.21	0.20
x41	0.30	0.29	0.27	0.31	1.77	0.27	0.29	0.27	0.32	0.33	0.33	0.07	0.33	0.32	0.31
x42	0.26	0.31	0.25	0.26	0.26	2.01	0.26	0.38	0.25	0.26	0.26	0.18	0.27	0.26	0.25
x43	0.28	0.27	0.27	0.27	0.30	0.24	2.14	0.25	0.29	0.31	0.31	0.05	0.41	0.30	0.29
x44	0.33	0.33	0.30	0.32	0.37	0.44	0.33	2.03	0.35	0.38	0.37	0.10	0.37	0.37	0.34
x45	0.41	0.42	0.38	0.40	0.45	0.36	0.41	0.37	2.13	0.46	0.46	0.09	0.49	0.45	0.43
x46	1.22	1.20	1.14	1.19	1.34	1.08	1.20	1.12	1.30	2.85	1.38	0.25	1.36	1.35	1.27
x47	1.84	1.82	1.79	1.84	2.03	1.63	1.83	1.69	2.00	2.08	3.61	0.41	2.27	2.02	1.96
x48	0.25	0.24	0.23	0.24	0.28	0.24	0.25	0.23	0.26	0.28	0.28	0.77	0.28	0.27	0.25
x49	2.96	2.89	2.91	2.87	3.21	2.57	2.91	2.65	3.16	3.34	3.31	0.54	4.79	3.25	3.07
x50	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.00	0.02	1.44	0.01
x51	0.35	0.34	0.32	0.34	0.39	0.30	0.34	0.31	0.37	0.40	0.40	0.08	0.39	0.39	1.83
x52	1.58	1.48	1.39	1.47	1.60	1.30	1.45	1.33	1.58	1.65	1.64	0.37	1.68	1.61	1.60
x53	5.15	5.05	4.65	4.98	5.64	4.42	5.06	4.56	5.48	5.87	5.81	1.00	5.77	5.72	5.32
x54	0.41	0.40	0.37	0.40	0.45	0.35	0.40	0.36	0.44	0.47	0.46	0.08	0.46	0.45	0.42
x55	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01
x56	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01

Table 8 (continued)

	f37	f38	f39	f40	f41	f42	f43	f44	f45	f46	f47	f48	f49	f50	f51
x57	0.65	0.65	0.58	0.63	0.73	0.54	0.64	0.56	0.69	0.76	0.75	0.17	0.72	0.75	0.65
x58	0.07	0.07	0.06	0.07	0.07	0.06	0.07	0.06	0.07	0.08	0.08	0.01	0.08	0.07	0.07
x59	2.49	2.44	2.27	2.41	2.69	2.16	2.44	2.23	2.63	2.79	2.77	0.55	2.76	2.72	2.55
x60	2.41	2.39	2.16	2.33	2.68	2.05	2.38	2.10	2.57	2.78	2.75	0.56	2.68	2.72	2.45
x61	1.95	1.92	1.75	1.88	2.14	1.66	1.91	1.70	2.06	2.22	2.20	0.48	2.15	2.18	1.97
x62	0.12	0.12	0.10	0.11	0.13	0.10	0.12	0.10	0.12	0.14	0.13	0.03	0.13	0.13	0.12
x63	2.26	2.21	2.06	2.20	2.45	1.95	2.22	2.02	2.41	2.56	2.53	0.39	2.53	2.48	2.33
x64	0.77	0.75	0.70	0.74	0.83	0.66	0.75	0.68	0.82	0.86	0.86	0.14	0.86	0.84	0.79
x65	0.31	0.30	0.28	0.30	0.33	0.27	0.30	0.27	0.33	0.35	0.34	0.06	0.34	0.34	0.32
x66	1.06	0.94	0.92	0.95	1.03	0.84	0.94	0.85	1.01	1.07	1.06	0.24	1.10	1.04	0.98
Sum	45.92	45.28	42.73	44.86	49.13	41.11	45.60	41.98	48.49	50.84	50.60	12.10	51.12	49.59	47.16

	f52	f53	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	X	f	x^2	f^2
x1	0.33	0.32	0.31	0.31	0.25	0.29	0.33	0.33	0.32	0.37	0.28	0.26	0.30	0.30	0.32	19.10	1.00	365.00	1.01
x2	0.13	0.12	0.12	0.12	0.09	0.11	0.13	0.13	0.12	0.15	0.11	0.10	0.11	0.11	0.12	8.35	1.24	69.72	1.54
x3	0.34	0.34	0.32	0.32	0.26	0.31	0.35	0.34	0.34	0.38	0.30	0.28	0.31	0.31	0.33	19.21	0.81	368.83	0.65
x4	0.34	0.34	0.32	0.32	0.27	0.31	0.34	0.34	0.33	0.37	0.30	0.29	0.32	0.31	0.33	19.91	0.98	396.46	0.96
x5	0.24	0.23	0.22	0.22	0.18	0.21	0.24	0.24	0.23	0.26	0.20	0.19	0.21	0.21	0.23	13.42	0.78	180.04	0.61
x6	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.42	0.91	2.02	0.83
x7	1.60	1.52	1.47	1.46	1.15	1.40	1.62	1.59	1.57	1.85	1.35	1.21	1.43	1.41	1.54	85.15	0.92	7250.17	0.84
x8	0.09	0.08	0.08	0.08	0.06	0.08	0.09	0.09	0.08	0.10	0.07	0.06	0.08	0.08	0.08	5.75	0.98	33.08	0.95
x9	0.45	0.43	0.41	0.41	0.32	0.39	0.46	0.45	0.44	0.52	0.38	0.34	0.40	0.39	0.43	24.35	0.78	592.80	0.61
x10	0.29	0.27	0.27	0.27	0.20	0.25	0.30	0.29	0.28	0.34	0.24	0.21	0.26	0.26	0.28	16.43	0.98	270.02	0.97
x11	0.21	0.20	0.19	0.20	0.15	0.18	0.21	0.21	0.20	0.24	0.18	0.16	0.19	0.19	0.20	12.82	1.21	164.43	1.47
x12	0.10	0.09	0.09	0.09	0.07	0.09	0.10	0.10	0.09	0.11	0.08	0.08	0.09	0.09	0.09	6.19	0.95	38.28	0.91

Table 8 (continued)

	f52	f53	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	X	f	x^2	f^2
x13	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	3.10	1.14	9.63	1.31
x14	0.10	0.10	0.09	0.09	0.07	0.09	0.11	0.10	0.10	0.11	0.08	0.08	0.09	0.09	0.10	6.29	0.78	39.52	0.61
x15	0.21	0.19	0.19	0.19	0.15	0.18	0.21	0.21	0.19	0.23	0.17	0.16	0.18	0.18	0.20	11.92	0.80	142.13	0.63
x16	0.29	0.28	0.27	0.27	0.21	0.25	0.30	0.29	0.29	0.34	0.24	0.22	0.26	0.26	0.28	17.44	0.80	304.25	0.64
x17	2.28	2.19	2.11	2.09	1.67	2.02	2.31	2.28	2.24	2.62	1.95	1.76	2.05	2.03	2.20	121.94	0.98	14869.03	0.96
x18	0.22	0.20	0.20	0.20	0.15	0.19	0.22	0.22	0.21	0.25	0.18	0.16	0.19	0.19	0.21	12.22	0.87	149.30	0.76
x19	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	2.37	1.01	5.64	1.02
x20	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	3.17	0.83	10.07	0.69
x21	0.06	0.05	0.05	0.05	0.04	0.05	0.06	0.06	0.05	0.06	0.05	0.04	0.05	0.05	0.05	3.80	0.79	14.41	0.63
x22	0.10	0.12	0.10	0.10	0.11	0.11	0.10	0.11	0.10	0.09	0.11	0.12	0.11	0.11	0.10	7.14	0.97	50.91	0.94
x23	0.17	0.15	0.15	0.20	0.12	0.14	0.16	0.16	0.15	0.18	0.14	0.12	0.14	0.16	0.15	10.14	1.11	102.85	1.24
x24	0.86	0.81	0.79	0.78	0.61	0.75	0.87	0.85	0.84	1.00	0.72	0.64	0.76	0.75	0.82	47.61	1.48	2266.82	2.21
x25	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	−0.01	0.01	0.01	0.00	0.00	0.00	2.23	1.48	4.98	2.19
x26	0.03	0.14	0.08	0.07	0.25	0.14	−0.01	0.04	0.04	−0.13	0.15	0.27	0.12	0.12	0.05	6.44	1.50	41.46	2.26
x27	2.93	2.85	2.73	2.70	2.24	2.63	2.95	2.93	2.88	3.29	2.55	2.35	2.67	2.63	2.83	157.38	1.29	24769.12	1.66
x28	0.59	0.57	0.55	0.57	0.45	0.53	0.59	0.59	0.57	0.65	0.51	0.48	0.54	0.54	0.57	33.21	1.42	1103.08	2.03
x29	0.09	0.08	0.08	0.09	0.06	0.07	0.09	0.08	0.08	0.10	0.07	0.06	0.08	0.08	0.08	6.47	1.53	41.89	2.33
x30	0.18	0.17	0.17	0.17	0.13	0.16	0.18	0.18	0.18	0.21	0.15	0.13	0.16	0.16	0.17	11.10	1.45	123.19	2.11
x31	0.06	0.06	0.06	0.06	0.04	0.05	0.06	0.06	0.06	0.07	0.05	0.04	0.05	0.05	0.06	4.71	1.45	22.23	2.11
x32	0.04	0.05	0.04	0.04	0.05	0.04	0.03	0.04	0.04	0.03	0.04	0.05	0.04	0.04	0.04	4.32	1.42	18.69	2.01
x33	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	2.82	1.42	7.93	2.01
x34	0.05	0.05	0.07	0.04	0.03	0.04	0.05	0.05	0.05	0.06	0.04	0.04	0.04	0.04	0.05	3.30	0.77	10.92	0.59
x35	3.78	3.46	3.24	3.26	2.51	3.62	3.62	3.58	3.44	4.07	3.01	2.66	3.14	3.20	3.40	188.69	1.38	35605.49	1.91
x36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	1.33	2.11	1.78

Table 8 (continued)

	f52	f53	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	X	f	x^2	f^2
x37	0.25	0.25	0.23	0.23	0.18	0.22	0.25	0.25	0.24	0.29	0.21	0.19	0.22	0.22	0.24	14.67	1.37	215.07	1.88
x38	0.41	0.41	0.43	0.45	0.39	0.40	0.41	0.40	0.39	0.43	0.43	0.35	0.39	0.42	0.40	24.32	1.36	591.62	1.86
x39	0.19	0.21	0.19	0.19	0.19	0.20	0.19	0.20	0.19	0.18	0.19	0.21	0.19	0.19	0.19	12.36	1.32	152.84	1.74
x40	0.20	0.19	0.18	0.18	0.14	0.17	0.20	0.20	0.19	0.26	0.17	0.15	0.18	0.18	0.19	12.53	1.35	156.98	1.83
x41	0.30	0.29	0.28	0.29	0.25	0.27	0.32	0.30	0.29	0.35	0.28	0.23	0.30	0.27	0.29	17.48	1.42	305.58	2.03
x42	0.27	0.27	0.25	0.98	0.24	0.27	0.26	0.26	0.25	0.25	0.25	0.25	0.26	0.51	0.25	17.24	1.28	297.11	1.65
x43	0.28	0.28	0.26	0.25	0.20	0.24	0.28	0.28	0.27	0.32	0.23	0.21	0.25	0.24	0.27	16.62	1.36	276.32	1.84
x44	0.36	0.31	0.31	0.36	0.24	0.29	0.34	0.33	0.31	0.36	0.28	0.26	0.29	0.32	0.32	19.42	1.30	377.26	1.68
x45	0.42	0.40	0.39	0.38	0.30	0.37	0.42	0.42	0.41	0.48	0.35	0.32	0.39	0.37	0.40	23.89	1.41	570.89	1.99
x46	1.24	1.18	1.13	1.12	0.87	1.10	1.25	1.23	1.19	1.43	1.03	0.92	1.10	1.08	1.18	66.48	1.46	4419.02	2.13
x47	1.88	1.80	1.72	1.72	1.41	1.63	1.93	1.89	1.81	2.17	1.57	1.39	1.71	1.68	1.79	100.50	1.46	10100.49	2.13
x48	0.25	0.23	0.23	0.24	0.18	0.26	0.26	0.25	0.24	0.28	0.26	0.19	0.28	0.22	0.28	14.13	0.66	199.54	0.43
x49	2.99	2.99	2.75	2.72	2.10	2.60	3.04	2.98	2.92	3.48	2.50	2.21	2.67	2.62	2.87	158.40	1.48	25089.26	2.18
x50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	2.18	1.43	4.76	2.04
x51	0.35	0.33	0.32	0.31	0.25	0.31	0.36	0.35	0.33	0.40	0.29	0.26	0.33	0.33	0.35	19.93	1.39	397.18	1.93
x52	2.95	1.44	1.38	1.36	1.09	1.35	1.58	1.49	1.44	1.69	1.27	1.14	1.33	1.32	1.44	80.34	1.39	6454.00	1.94
x53	5.19	6.47	4.72	4.67	3.64	4.48	5.29	5.19	5.00	5.98	4.37	3.86	4.66	4.51	5.00	273.14	1.40	74603.45	1.96
x54	0.41	0.40	1.70	0.37	0.29	0.36	0.42	0.41	0.40	0.47	0.35	0.31	0.39	0.36	0.40	22.90	1.32	524.57	1.74
x55	0.01	0.01	0.02	1.32	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.84	1.31	3.40	1.71
x56	0.01	0.01	0.01	0.01	1.17	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.70	1.16	2.90	1.35
x57	0.65	0.60	0.58	0.57	0.45	1.86	0.66	0.65	0.60	0.72	0.53	0.50	0.57	0.56	0.62	35.25	1.30	1242.75	1.69
x58	0.07	0.07	0.16	0.06	0.05	0.06	1.58	0.07	0.07	0.08	0.06	0.05	0.06	0.06	0.09	5.22	1.39	27.25	1.92
x59	2.59	2.38	2.31	2.28	1.80	2.20	2.59	4.06	2.44	2.95	2.12	1.90	2.25	2.21	2.41	133.95	1.40	17942.68	1.95
x60	2.46	2.42	2.21	2.20	1.74	2.11	2.48	2.42	3.69	2.99	2.02	1.84	2.15	2.11	2.33	128.68	1.37	16557.51	1.88

Table 8 (continued)

	f52	f53	f54	f55	f56	f57	f58	f59	f60	f61	f62	f63	f64	f65	f66	X	f	x^2	f^2
x61	2.00	1.84	1.81	1.74	1.41	1.71	2.06	1.96	1.87	3.84	1.78	1.50	1.79	1.80	1.94	104.80	1.49	10982.95	2.23
x62	0.12	0.11	0.10	0.10	0.09	0.10	0.12	0.12	0.11	0.13	1.37	0.09	0.10	0.10	0.11	7.41	1.26	54.95	1.60
x63	2.29	2.16	2.10	2.08	1.60	1.99	2.33	2.28	2.24	2.68	1.92	3.42	2.03	2.00	2.20	119.36	1.22	14247.08	1.49
x64	0.80	0.73	0.71	0.71	0.55	0.68	0.79	0.77	0.76	0.90	0.65	0.58	2.11	0.68	0.74	41.50	1.31	1722.21	1.70
x65	0.36	0.29	0.29	0.29	0.23	0.35	0.32	0.31	0.30	0.36	0.26	0.23	0.28	1.58	0.30	17.46	1.29	304.75	1.67
x66	1.00	0.94	1.10	0.88	0.70	0.92	1.02	1.06	0.92	1.12	0.93	0.74	0.90	0.87	2.36	53.19	1.35	2829.53	1.83
Sum	46.57	44.60	42.75	42.93	33.80	41.33	46.94	46.20	44.55	52.68	39.55	35.98	41.70	41.28	44.42	2448.28	79.59	280100.43	100.00

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