

Disposition of Industries and Primary Factors of Production

Measurement of tax incidence from applied general equilibrium tax analysis is usually obtained using industry and factor market delineations with polar factor input requirements—capital versus labor intensive, durable versus short-lived capital, business sector versus owner-occupied housing, corporate versus non-corporate industry. We employ this criteria with refinements designed to emphasize the food and farm industries, and to use the most advantageous interpretation of primary data sources. Using procedures described in the following subsection, we classify industry as follows: capital-intensive farms, other farms, capital-intensive food manufacturing, other food manufacturers, capital-intensive nonfood manufacturing, other nonfood manufacturing, and services, mines, and trade (all other industry).

All value added produced by industry is either labor or capital. Capital is heterogeneous, and our data are based on 14 distinct aggregations from 54 classifications of capital types, as defined in BEA detailed wealth accounts (U.S. Department of Commerce, Bureau of Economic Analysis, 1998). These 14 aggregates include both corporate and noncorporate classifications. The purpose of this distinction is to capture the tax differential due to the corporate tax wedge. One industry, services, mines, and trade, employs both corporate and noncorporate capital, while all other industry aggregates employ either all corporate or all noncorporate capital. The six corporate-owned assets are computers/office equipment, service and furnishing equipment, heavy machinery, transportation equipment, industrial plants, and utility plants. Noncorporate enterprise also owns these six asset aggregates, as well as farmland. Finally, residential shelter (which is a hybrid of both corporate and noncorporate owned), along with labor services, complete the list of 15 possible primary factor inputs available to industry.

Industry Classification

The national input-output accounts describe the value added by capital and labor in nearly 500 U.S. industry aggregates. All industry output is tradable and must be produced in all regions. For this

condition to hold, aggregate groupings of industry output in all regions must be developed. We, therefore, map the industrial aggregates into these 35 industry categories (table 1), and determine the capital and labor value added. Based on the ratio of total capital value added per worker in each industry and using a procedure for identifying exotic values within a known distribution (Hoaglin, Iglewicz, and Tukey), we determine that three special capital-intensive industries will be explicitly represented in the numerical model: cash grain farms; tobacco and beverages; and chemical, rubber, and plastic manufacturing. All other industry is grouped as follows: farms; food manufacturers; nonfood manufacturers; and services, mines, and trade. Two other capital-intensive industries—construction, and owner-occupied shelter—are grouped with the services, mines, and trade industry.

Labor

Labor does have some special classifications in the tax code—for example, employees over 65 years in age, certain handicaps, marital status, and veterans' preferences. Most of these can be treated with explicit accounts of labor dispositions in regional markets. Industry bias in these characteristics has not been convincingly demonstrated, so our approach is to model the representative worker for each regional industry, such that firm-level labor is homogeneous, while industry and regional labor is heterogeneous, strictly due to tax treatments.

Capital

Among the most complicated aspects of the Federal tax code are the special provisions for the ownership of business capital. Most of this complication involves owner claims of capital depreciation over a given tax year—a real expense to capital owners, but difficult to quantify. While there are countless different types and uses of business capital, and even more rates of wear and tear on this capital, there are six cost-recovery periods in the tax code (plus a few special other classifications), one of which each asset must follow for claims of cost recovery. A number of economic studies have been conducted to

Table 3--Regional factor shares of industry value added, by capital type and labor

Region/ factor	Cash Farms	grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Appalachian:									
Corporate--									
Computers/office equipment	0	0	0.672	3.083	1.262	2.809	0.586	0.105	0
Service and furnishing equipment	0	0	0.429	1.833	0.488	0.316	0.251	0.080	0
Heavy machinery	0	0	5.717	32.342	7.822	13.309	0.645	3.436	0
Transportation equipment	0	0	0.321	2.176	0.307	0.259	0.565	2.235	0
Industrial plants	0	0	2.714	12.469	3.988	5.416	2.083	1.350	0
Utility plants	0	0	0	0	0	0	0.731	0.021	0
Noncorporate--									
Computers/office equipment	0.042	0.008	0	0	0	0	0.218	0.045	0
Service and furnishing equipment	0.001	0	0	0	0	0	0.123	0.034	0
Heavy machinery	2.710	0.433	0	0	0	0	0.227	1.457	0
Transportation equipment	0.989	0.113	0	0	0	0	0.286	0.949	0
Industrial plants	0.941	0.115	0	0	0	0	1.029	0.581	0
Utility plants	0	0	0	0	0	0	0.100	0.004	0
Farmland	4.477	1.074	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	0.869	0	9.121
Labor services	8.211	3.665	9.136	35.559	10.031	14.417	8.179	0	0
Corn Belt:									
Corporate--									
Computers/office equipment	0	0	1.683	0.646	1.961	2.322	1.024	0.148	0
Service and furnishing equipment	0	0	1.075	0.412	0.615	0.282	0.446	0.114	0
Heavy machinery	0	0	14.322	5.543	12.690	12.488	0.888	4.861	0
Transportation equipment	0	0	0.805	0.314	0.441	0.245	1.052	3.165	0
Industrial plants	0	0	6.779	2.661	5.942	6.588	3.699	1.769	0
Utility plants	0	0	0	0	0	0	1.218	0.025	0
Noncorporate--									
Computers/office equipment	0.090	0.183	0	0	0	0	0.374	0.064	0
Service and furnishing equipment	0.003	0.006	0	0	0	0	0.215	0.049	0
Heavy machinery	5.665	9.684	0	0	0	0	0.317	2.062	0
Transportation equipment	1.675	2.561	0	0	0	0	0.495	1.343	0
Industrial plants	1.873	2.671	0	0	0	0	1.805	0.763	0
Utility plants	0	0	0	0	0	0	0.085	0.005	0
Farmland	10.042	24.325	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	1.411	0	14.703
Labor services	11.293	39.020	19.792	9.645	18.750	19.733	13.861	0	0
Delta States:									
Corporate--									
Computers/office equipment	0	0	0.326	0.114	0.424	1.092	0.215	0.034	0
Service and furnishing equipment	0	0	0.208	0.073	0.162	0.119	0.092	0.023	0
Heavy machinery	0	0	2.773	0.974	2.962	4.932	0.267	0.920	0
Transportation equipment	0	0	0.156	0.055	0.114	0.096	0.215	0.592	0
Industrial plants	0	0	1.672	0.533	1.384	1.253	0.766	0.308	0
Utility plants	0	0	0	0	0	0	0.610	0.207	0
Noncorporate--									
Computers/office equipment	0.022	0.013	0	0	0	0	0.082	0.013	0
Service and furnishing equipment	0.001	0	0	0	0	0	0.044	0.009	0
Heavy machinery	1.269	0.585	0	0	0	0	0.077	0.384	0
Transportation equipment	0.397	0.200	0	0	0	0	0.098	0.249	0
Industrial plants	0.388	0.185	0	0	0	0	0.370	0.124	0
Utility plants	0	0	0	0	0	0	0.082	0.043	0
Farmland	2.723	1.734	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	0.314	0	2.908
Labor services	4.273	3.088	4.497	1.698	2.887	5.179	2.655	0	0

Continued--

Table 3--Regional factor shares of industry value added, by capital type and labor--Continued

Region/ factor	Farms	Cash grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Lake States:									
Corporate--									
Computers/office equipment	0	0	0.933	0.387	0.876	0.480	0.475	0.088	0
Service and furnishing equipment	0	0	0.596	0.247	0.299	0.065	0.222	0.068	0
Heavy machinery	0	0	7.938	3.292	5.973	3.046	0.402	2.931	0
Transportation equipment	0	0	0.446	0.185	0.227	0.060	0.475	1.909	0
Industrial plants	0	0	4.763	1.623	2.479	1.130	1.778	0.982	0
Utility plants	0	0	0	0	0	0	0.496	0.011	0
Noncorporate--									
Computers/office equipment	0.047	0.033	0	0	0	0	0.189	0.038	0
Service and furnishing equipment	0.002	0.001	0	0	0	0	0.110	0.029	0
Heavy machinery	2.974	1.743	0	0	0	0	0.155	1.244	0
Transportation equipment	0.838	0.456	0	0	0	0	0.248	0.810	0
Industrial plants	1.031	0.466	0	0	0	0	0.886	0.421	0
Utility plants	0	0	0.	0.	0	0	0.041	0.002	0
Farmland	5.213	4.362	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	0.681	0	8.034
Labor services	7.926	9.844	10.097	4.898	11.266	8.092	6.867	0	0
Mountain:									
Corporate--									
Computers/office equipment	0	0	0.245	0.229	0.383	0.271	0.455	0.073	0
Service and furnishing equipment	0	0	0.157	0.146	0.107	0.029	0.182	0.053	0
Heavy machinery	0	0	2.086	1.949	1.917	1.204	0.496	2.186	0
Transportation equipment	0	0	0.117	0.110	0.079	0.023	0.419	1.419	0
Industrial plants	0	0	1.226	0.740	1.027	0.459	1.663	0.973	0
Utility plants	0	0	0	0	0	0	0.705	0.107	0
Noncorporate--									
Computers/office equipment	0.041	0.044	0	0	0	0	0.167	0.031	0
Service and furnishing equipment	0.001	0.002	0	0	0	0	0.089	0.023	0
Heavy machinery	2.448	2.387	0	0	0	0	0.170	0.924	0
Transportation equipment	0.690	0.611	0	0	0	0	0.208	0.601	0
Industrial plants	0.803	0.581	0	0	0	0	0.828	0.420	0
Utility plants	0	0	0	0	0	0	0.092	0.022	0
Farmland	4.960	5.942	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	0.641	0	5.408
Labor services	7.088	6.516	3.799	5.765	3.807	1.132	5.621	0	0
Northeast:									
Corporate--									
Computers/office equipment	0	0	0.874	0.467	2.075	2.032	2.013	0.236	0
Service and furnishing equipment	0	0	0.558	0.297	0.654	0.233	0.847	0.181	0
Heavy machinery	0	0	7.440	4.012	10.484	9.969	1.352	7.755	0
Transportation equipment	0	0	0.418	0.228	0.422	0.195	1.600	5.051	0
Industrial plants	0	0	2.924	1.427	3.450	4.662	7.314	2.949	0
Utility plants	0	0	0	0	0	0	1.772	0.013	0
Noncorporate--									
Computers/office equipment	0.032	0.005	0	0	0	0	0.742	0.102	0
Service and furnishing equipment	0.001	0	0	0	0	0	0.434	0.078	0
Heavy machinery	2.387	0.277	0	0	0	0	0.545	3.291	0
Transportation equipment	0.707	0.074	0	0	0	0	0.867	2.144	0
Industrial plants	0.891	0.077	0	0	0	0	3.728	1.272	0
Utility plants	0	0	0	0	0	0	0.138	0.003	0
Farmland	2.885	0.676	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	3.398	0	24.752
Labor services	8.052	2.319	15.640	11.938	20.581	21.416	26.660	0	0

Continued--

Table 3--Regional factor shares of industry value added, by capital type and labor--Continued

Region/ factor	Cash Farms grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter	
<i>Percent of industry value added</i>									
Northern Plains:									
Corporate--									
Computers/office equipment	0	0	0.357	0.032	0.369	0.151	0.148	0.027	0
Service and furnishing equipment	0	0	0.228	0.020	0.090	0.019	0.060	0.020	0
Heavy machinery	0	0	3.037	0.274	1.658	0.861	0.134	0.887	0
Transportation equipment	0	0	0.171	0.015	0.062	0.017	0.139	0.577	0
Industrial plants	0	0	1.442	0.077	1.249	0.559	0.497	0.283	0
Utility plants	0	0	0	0	0	0	0.239	0.025	0
Noncorporate--									
Computers/office equipment	0.046	0.128	0	0	0	0	0.052	0.011	0
Service and furnishing equipment	0.002	0.004	0	0	0	0	0.029	0.009	0
Heavy machinery	2.554	6.843	0	0	0	0	0.052	0.376	0
Transportation equipment	0.696	1.764	0	0	0	0	0.066	0.245	0
Industrial plants	0.740	1.720	0	0	0	0	0.241	0.120	0
Utility plants	0	0	0	0	0	0	0.045	0.005	0
Farmland	5.911	17.137	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	0.214	0	1.980
Labor services	7.067	22.387	6.545	0.799	1.811	1.547	1.856	0	0
Pacific:									
Corporate--									
Computers/office equipment	0	0	0.735	0.465	1.102	0.568	1.202	0.143	0
Service and furnishing equipment	0	0	0.469	0.297	0.378	0.069	0.518	0.104	0
Heavy machinery	0	0	6.257	3.961	6.224	3.050	0.909	4.266	0
Transportation equipment	0	0	0.352	0.223	0.276	0.060	1.116	2.775	0
Industrial plants	0	0	3.023	1.689	1.760	0.551	4.330	1.899	0
Utility plants	0	0	0	0	0	0	1.122	0.134	0
Noncorporate--									
Computers/office equipment	0.064	0.015	0	0	0	0	0.498	0.062	0
Service and furnishing equipment	0.002	0.001	0	0	0	0	0.262	0.045	0
Heavy machinery	3.785	0.812	0	0	0	0	0.436	1.807	0
Transportation equipment	1.101	0.221	0	0	0	0	0.618	1.177	0
Industrial plants	1.510	0.212	0	0	0	0	2.238	0.829	0
Utility plants	0	0	0	0	0	0	0.208	0.028	0
Farmland	7.393	2.059	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	2.548	0	14.899
Labor services	26.186	5.318	15.334	12.927	15.863	8.209	16.329	0	0
Southern Plains:									
Corporate--									
Computers/office equipment	0	0	0.494	0.359	0.723	1.282	0.783	0.087	0
Service and furnishing equipment	0	0	0.316	0.229	0.219	0.144	0.305	0.059	0
Heavy machinery	0	0	4.207	3.055	4.081	6.076	0.809	2.372	0
Transportation equipment	0	0	0.236	0.172	0.164	0.118	0.690	1.530	0
Industrial plants	0	0	2.060	1.237	1.287	1.333	2.920	1.001	0
Utility plants	0	0	0	0	0	0	2.065	0.438	0
Noncorporate--									
Computers/office equipment	0.050	0.032	0	0	0	0	0.293	0.034	0
Service and furnishing equipment	0.002	0.001	0	0	0	0	0.148	0.024	0
Heavy machinery	3.194	1.672	0	0	0	0	0.266	0.994	0
Transportation equipment	0.960	0.446	0	0	0	0	0.312	0.644	0
Industrial plants	1.084	0.428	0	0	0	0	1.422	0.416	0
Utility plants	0	0	0	0	0	0	0.326	0.091	0
Farmland	5.435	4.251	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	0.975	0	7.339
Labor services	8.312	5.805	6.794	6.060	6.248	10.450	7.845	0	0

Continued--

Table 3--Regional factor shares of industry value added, by capital type and labor--Continued

Region/ factor	Cash Farms	Cash grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Southeast:									
Corporate--									
Computers/office equipment	0	0	0.438	0.595	0.787	1.196	0.796	0.110	0
Service and furnishing equipment	0	0	0.279	0.363	0.350	0.138	0.330	0.082	0
Heavy machinery	0	0	3.724	5.822	5.805	5.890	0.650	3.373	0
Transportation equipment	0	0	0.209	0.372	0.212	0.115	0.684	2.197	0
Industrial plants	0	0	1.592	2.177	2.188	2.417	2.751	1.546	0
Utility plants	0	0	0	0	0	0	0.877	0.011	0
Noncorporate--									
Computers/office equipment	0.029	0.003	0	0	0	0	0.294	0.049	0
Service and furnishing equipment	0.001	0	0	0	0	0	0.165	0.035	0
Heavy machinery	1.801	0.159	0	0	0	0	0.258	1.431	0
Transportation equipment	0.589	0.042	0	0	0	0	0.369	0.933	0
Industrial plants	0.645	0.045	0	0	0	0	1.396	0.678	0
Utility plants	0	0	0	0	0	0	0.093	0.002	0
Farmland	3.148	0.380	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	1.101	0	10.855
Labor services	11.594	2.037	8.367	10.712	8.756	9.823	10.126	0	0
United States:									
Corporate--									
Computers/office equipment	0	0	6.757	6.378	9.963	12.202	7.698	1.050	0
Service and furnishing equipment	0	0	4.314	3.918	3.364	1.414	3.253	0.784	0
Heavy machinery	0	0	57.503	61.223	59.617	60.826	6.552	32.985	0
Transportation equipment	0	0	3.232	3.848	2.303	1.189	6.954	21.449	0
Industrial plants	0	0	28.194	24.633	24.753	24.369	27.801	13.060	0
Utility plants	0	0	0	0	0	0	9.835	0.991	0
Noncorporate--									
Computers/office equipment	0.463	0.463	0	0	0	0	2.911	0.449	0
Service and furnishing equipment	0.016	0.016	0	0	0	0	1.618	0.335	0
Heavy machinery	28.787	24.595	0	0	0	0	2.504	13.971	0
Transportation equipment	8.642	6.487	0	0	0	0	3.569	9.095	0
Industrial plants	9.905	6.499	0	0	0	0	13.943	5.624	0
Utility plants	0	0	0	0	0	0	1.210	0.207	0
Farmland	52.187	61.940	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	12.153	0	100.000
Labor services	100.000	100.000	100.000	100.000	100.000	100.000	100.000	0	0

measure economic rates of wear and tear for many different forms of capital. For our purposes, we have adopted the work of Hulten and Wykoff, with adaptations reported in Jorgenson and Yun. This work provides a geometric rate of capital decay for the 50 different classifications of business capital plus residential structures, as reported in the annual detailed wealth accounts at the BEA. We use this information in forming heterogeneous accounts of business and residential capital. The appendix describes the regional heterogeneous industry capital accounts.

Capital and Labor Disposition

The disposition of an industry's primary factors of production affects tax rates on that industry. A number of factors are important, and in this section we examine the regional and industrial dimensions of factor-use dispositions. A longitudinal dissection of factor-use disposition will show regional primary factor (row) shares of national industry value added by industry (column), where capital and labor factors are distinguished. A latitudinal dissection will show industry (column) shares of each regional factor of production (row) total value added.

Table 3 presents the regional primary factor shares of industry value added. When we exclude the United States as a region, each column sums to a value of 100 for heterogeneous capital and labor, and each column entry represents a percentage of U.S. total value added, by industry, for either capital or labor. For example, 39 percent of labor services in U.S. cash grain production was in the Corn Belt States, while 25 percent of capital value added in the owner-occupied shelter industry came from Northeastern States.

At the bottom of table 3, we report the United States as a region. Because labor and capital are treated separately, all industries that use labor show values of 100, indicating that 100 percent of U.S. labor by industry is located in the U.S. region. For capital, this U.S. region shows the disposition of capital, by type, in each industry. The figures show that all nonresidential industries using corporate capital are most heavily leveraged in the use of heavy machinery, except services, mines, and trade (the largest industry). The only purely noncorporate industry is cash grain and other farming. For these industries, farmland is the most heavily leveraged

asset, particularly in cash grain farms. Noncash grain farms are more likely to substitute plant and heavy machinery for land in their operation.

We explicitly recognize the regional dispositions of industry capital portfolios, but make no attempt to endogenize the determinants of industry location. Some stylized facts are noteworthy. The regional disposition of farm industries is largely intuitive; climate, weather, and resource characteristics limit the range of commodity options within a given geographic region. For example, cotton is a warm-weather plant, so commercial cotton production is limited to Southern States. Wheat thrives in cooler climates, hence its more northerly concentration. Citrus production, an uncharacteristically labor-intensive industry, is almost exclusively in the warm sunny climates of Florida and California. Agriculture, in general, is a land-intensive industry, so tends to be concentrated in areas with more favorable land cost conditions (rural areas). Many food manufactures have strong incentives to locate near their primary upstream industry (farms) when freshness or transportation costs of the preprocessed product is a significant factor. Examples of other industry-location determinants include strength of regional labor unions, proximity to markets and transportation, supply of skilled or unskilled labor, regional demographic and taxation characteristics, historical chance, agglomeration economies, and dissemination of transportation barriers.¹¹

Each of these factors, while not explicitly addressed, may play a role in the calibration of the model, since empirical accounts of relative factor prices, input utilizations, and regional consumption patterns must be reconciled with general equilibrium. This is done through calibration of weighting parameters for both supply and demand function specifications. So, for example, a particular region that has a disproportionate elderly population may bias their consumption bundle, and our regional data will reflect this. While we have no explicit account of age demographics, the resulting model calibration will produce a weighting parameter that favors a consumption bundle likely to be more reflective of the preferences of a more aged population. Another way we address this issue is through our

¹¹A review of this literature is presented in Blair and Premus, and a recent application is Ellison and Glaeser.

development of competing closure assumptions in the model (see “Macroeconomic Closure” subsection in the previous section). Depending on which closure assumption we employ, our model will reflect the public finance effects of regional industry locations, due to a firm’s propensity to target (or not) new capital investment based on differential regional rates of return.

Regional and industrial variations in the disposition of capital exist. For example, although computers remain a small share of industrial capital portfolios, the chemical, rubber, and plastic industry spends approximately \$1 in every \$8 on such equipment, while construction industries spend about \$1 in every \$100. Farms are the only employers of land, and cash grain farms are 20 percent more dependent on land than other farms. Other farms substitute plant and heavy machinery for land, relative to cash grain farms. Another very important distinction of the farm industry is that it does not use corporate capital and competes only with service, mines, and trade and construction industries for the use of noncorporate capital. The most important farm factor is land, and there is no competition for this factor.

Within a given industry aggregate, the relative use of primary factors is uniform across regions. If we rank the cost shares from highest to lowest for each of the primary factors in each of the nine nonresidential industries, the U.S. average ranking is nearly the same as all regional rankings, give or take a ranking of 1. In fact, the only exception to this result is for the cost shares of utility plants. In the Delta and Southern Plains regions, utility plants have unusually prominent cost shares among primary factors in service, mines, and trade and construction industry aggregates.

Changing the perspective of factor disposition to industry shares of primary factor employment, table 4 presents column shares of row totals, such that each row sums to 100. Due to the extremely broad classification of the services, mines, and trade industry, it is the number one employer of most forms of capital in all regions. It is the number one corporate employer of computers, service and furnishing equipment, industrial plants, and utility plants, in every region, and the number two employer of corporate transportation equipment

(behind construction industries) in every region. The only type of capital for which the service, mines, and trade industry is neither the top nor second largest employer is heavy corporate machinery (except in the Mountain region, where it is the second largest employer).

Either manufacturing or construction is the number one employer of heavy corporate machinery in each region, while construction is the top employer of noncorporate heavy machinery in every region. The ordinal ranking of farms and cash grain farms is virtually the same in every region: the smallest two employers of noncorporate capital and the only employers of farmland. Cash grain farms are most prominent in the Corn Belt and Northern Plains regions. The only region where farms are a significant employer of capital is in the Northern Plains, where farms employ more than 12 percent of noncorporate heavy machinery.

One industry that does show some regional variation in ranking as an employer of capital is the food industry. Food manufacturers are number three in the use of labor services and most forms of corporate capital in the Northern Plains. Food manufacturers are also major employers of capital in the Lake States, Corn Belt, and Delta States. Food, beverages, and tobacco employ about 15 percent of heavy corporate machinery in the Appalachian region and over 10 percent in the Corn Belt, Lake States, and Northern Plains. Food manufacturers are also a large employer of corporate service and furnishing equipment in the Northern Plains. The per capita concentration of primary factor employment for food manufacturing is depicted in figure 9. The levels represent regional values relative to the Northern Plains region, which has the highest per capita production of manufactured food. A concentration of such employment in the upper Midwest is quite evident, indicating that a disproportionate share of manufactured food is produced in the Corn Belt, Lake States, and Northern Plains.

Overall, nearly half of all capital and 70 percent of the services from labor are employed in services, mines, and shelter, and with construction, two-thirds of all capital. Most of the remaining labor services are used in manufacturing. Food and farm industries are small employers of capital and labor services.

Table 4--Regional industry shares of factor value added, by capital type and labor

Region/ factor	Cash Farms	Cash grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Appalachian:									
Corporate--									
Computers/office equipment	0	0	2.816	4.657	25.711	16.723	46.295	3.797	0
Service and furnishing equipment	0	0	4.599	7.081	25.439	4.807	50.636	7.437	0
Heavy machinery	0	0	4.924	10.040	32.740	16.280	10.461	25.554	0
Transportation equipment	0	0	0.976	2.383	4.541	1.118	32.331	58.650	0
Industrial plants	0	0	3.187	5.276	22.752	9.030	46.067	13.688	0
Utility plants	0	0	0	0	0	0	98.670	1.330	0
Noncorporate--									
Computers/office equipment	0.138	0.006	0	0	0	0	91.193	8.664	0
Service and furnishing equipment	0.008	0	0	0	0	0	88.604	11.388	0
Heavy machinery	2.298	0.077	0	0	0	0	24.770	72.855	0
Transportation equipment	1.056	0.025	0	0	0	0	39.213	59.706	0
Industrial plants	0.561	0.014	0	0	0	0	78.971	20.453	0
Utility plants	0	0	0	0	0	0	97.985	2.015	0
Farmland	95.205	4.796	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	28.344	0	71.656
Labor services	0.373	0.016	1.998	1.689	26.407	5.144	64.373	0	0
Corn Belt:									
Corporate--									
Computers/office equipment	0	0	4.766	0.660	26.992	9.337	54.626	3.620	0
Service and furnishing equipment	0	0	7.682	1.061	21.377	2.864	60.010	7.007	0
Heavy machinery	0	0	9.275	1.294	39.935	11.484	10.834	27.179	0
Transportation equipment	0	0	1.593	0.224	4.236	0.689	39.191	54.067	0
Industrial plants	0	0	5.179	0.733	22.058	7.147	53.215	11.669	0
Utility plants	0	0	0	0	0	0	99.080	0.920	0
Noncorporate--									
Computers/office equipment	0.172	0.074	0	0	0	0	92.526	7.229	0
Service and furnishing equipment	0.010	0.004	0	0	0	0	90.619	9.367	0
Heavy machinery	3.330	1.195	0	0	0	0	23.970	71.505	0
Transportation equipment	1.154	0.370	0	0	0	0	43.904	54.572	0
Industrial plants	0.670	0.201	0	0	0	0	83.041	16.089	0
Utility plants	0	0	0	0	0	0	97.288	2.712	0
Farmland	66.285	33.715	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	28.491	0	71.509
Labor services	0.300	0.097	2.532	0.268	28.871	4.119	63.814	0	0
Delta States:									
Corporate--									
Computers/office equipment	0	0	3.912	0.495	24.757	18.618	48.686	3.532	0
Service and furnishing equipment	0	0	6.679	0.845	25.256	5.439	55.490	6.291	0
Heavy machinery	0	0	7.395	0.936	38.388	18.676	13.421	21.184	0
Transportation equipment	0	0	1.555	0.197	5.537	1.355	40.326	51.030	0
Industrial plants	0	0	6.090	0.700	24.491	6.480	52.554	9.685	0
Utility plants	0	0	0	0	0	0	86.544	13.456	0
Noncorporate--									
Computers/office equipment	0.196	0.023	0	0	0	0	92.963	6.818	0
Service and furnishing equipment	0.012	0.001	0	0	0	0	91.125	8.861	0
Heavy machinery	3.730	0.361	0	0	0	0	29.242	66.667	0
Transportation equipment	1.428	0.151	0	0	0	0	45.545	52.875	0
Industrial plants	0.700	0.070	0	0	0	0	85.990	13.240	0
Utility plants	0	0	0	0	0	0	80.626	19.374	0
Farmland	88.205	11.795	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	30.941	0	69.059
Labor services	0.614	0.041	3.111	0.255	24.038	5.845	66.096	0	0

Continued--

Table 4--Regional industry shares of factor value added, by capital type and labor--Continued

Region/ factor	Cash Farms	Cash grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Lake States:									
Corporate--									
Computers/office equipment	0	0	5.935	0.887	27.095	4.334	56.938	4.810	0
Service and furnishing equipment	0	0	8.510	1.272	20.791	1.317	59.750	8.360	0
Heavy machinery	0	0	10.534	1.574	38.521	5.741	10.047	33.582	0
Transportation equipment	0	0	1.644	0.246	4.063	0.316	32.980	60.750	0
Industrial plants	0	0	7.812	0.959	19.759	2.632	54.934	13.903	0
Utility plants	0	0	0	0	0	0	98.952	1.048	0
Non-corporate--									
Computers/office equipment	0.176	0.026	0	0	0	0	91.485	8.313	0
Service and furnishing equipment	0.010	0.001	0	0	0	0	89.274	10.714	0
Heavy machinery	3.076	0.379	0	0	0	0	20.647	75.898	0
Transportation equipment	1.039	0.119	0	0	0	0	39.596	59.246	0
Industrial plants	0.736	0.070	0	0	0	0	81.446	17.747	0
Utility plants	0	0	0	0	0	0	97.425	2.575	0
Farmland	85.058	14.942	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	26.039	0	73.961
Labor services	0.402	0.047	2.470	0.260	33.161	3.229	60.431	0	0
Mountain:									
Corporate--									
Computers/office equipment	0	0	2.082	0.701	15.818	3.267	72.756	5.375	0
Service and furnishing equipment	0	0	3.359	1.131	11.169	0.893	73.605	9.844	0
Heavy machinery	0	0	4.963	1.671	22.163	4.066	22.240	44.898	0
Transportation equipment	0	0	0.566	0.191	1.843	0.160	38.080	59.160	0
Industrial plants	0	0	2.615	0.569	10.651	1.392	66.840	17.934	0
Utility plants	0	0	0	0	0	0	93.525	6.475	0
Non-corporate--									
Computers/office equipment	0.177	0.040	0	0	0	0	91.865	7.919	0
Service and furnishing equipment	0.011	0.002	0	0	0	0	89.432	10.554	0
Heavy machinery	3.086	0.632	0	0	0	0	27.591	68.691	0
Transportation equipment	1.095	0.203	0	0	0	0	42.449	56.253	0
Industrial plants	0.607	0.092	0	0	0	0	80.568	18.732	0
Utility plants	0	0	0	0	0	0	90.015	9.985	0
Farmland	79.902	20.098	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	32.987	0	67.013
Labor services	0.574	0.049	1.481	0.488	17.857	0.720	78.832	0	0
Northeast:									
Corporate--									
Computers/office equipment	0	0	1.620	0.312	18.684	5.348	70.268	3.768	0
Service and furnishing equipment	0	0	2.574	0.494	14.649	1.527	73.552	7.204	0
Heavy machinery	0	0	4.471	0.869	30.616	8.507	15.298	40.239	0
Transportation equipment	0	0	0.546	0.107	2.677	0.361	39.348	56.961	0
Industrial plants	0	0	1.538	0.271	8.822	3.484	72.487	13.398	0
Utility plants	0	0	0	0	0	0	99.674	0.326	0
Non-corporate--									
Computers/office equipment	0.031	0.001	0	0	0	0	94.058	5.910	0
Service and furnishing equipment	0.002	0	0	0	0	0	92.423	7.575	0
Heavy machinery	0.895	0.022	0	0	0	0	26.292	72.791	0
Transportation equipment	0.296	0.006	0	0	0	0	46.711	52.987	0
Industrial plants	0.160	0.003	0	0	0	0	86.335	13.502	0
Utility plants	0	0	0	0	0	0	99.128	0.872	0
Farmland	95.312	4.688	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	36.300	0	63.700
Labor services	0.132	0.004	1.239	0.205	19.629	2.769	76.021	0	0

Continued--

Table 4--Regional industry shares of factor value added, by capital type and labor--Continued

Region/ factor	Cash Farms	Cash grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Northern Plains:									
Corporate--									
Computers/office equipment	0	0	6.622	0.215	33.252	3.968	51.658	4.286	0
Service and furnishing equipment	0	0	11.324	0.367	21.833	1.343	56.341	8.792	0
Heavy machinery	0	0	13.432	0.436	35.637	5.410	11.196	33.888	0
Transportation equipment	0	0	2.106	0.068	3.730	0.298	32.323	61.476	0
Industrial plants	0	0	7.163	0.137	30.135	3.940	46.484	12.140	0
Utility plants	0	0	0	0	0	0	95.455	4.545	0
Noncorporate--									
Computers/office equipment	0.616	0.359	0	0	0	0	90.163	8.863	0
Service and furnishing equipment	0.037	0.021	0	0	0	0	87.928	12.014	0
Heavy machinery	7.769	4.371	0	0	0	0	20.398	67.462	0
Transportation equipment	2.894	1.541	0	0	0	0	35.506	60.059	0
Industrial plants	1.890	0.923	0	0	0	0	79.120	18.067	0
Utility plants	0	0	0	0	0	0	94.969	5.031	0
Farmland	62.158	37.842	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	30.954	0	69.046
Labor services	1.471	0.435	6.563	0.174	21.850	2.531	66.976	0	0
Pacific:									
Corporate--									
Computers/office equipment	0	0	2.377	0.542	17.310	2.609	73.169	3.993	0
Service and furnishing equipment	0	0	3.564	0.813	13.947	0.743	74.105	6.828	0
Heavy machinery	0	0	6.504	1.484	31.434	4.502	17.791	38.286	0
Transportation equipment	0	0	0.751	0.171	2.858	0.182	44.881	51.157	0
Industrial plants	0	0	2.726	0.549	7.710	0.706	73.522	14.787	0
Utility plants	0	0	0	0	0	0	94.823	5.177	0
Noncorporate--									
Computers/office equipment	0.095	0.005	0	0	0	0	94.497	5.404	0
Service and furnishing equipment	0.006	0	0	0	0	0	92.700	7.293	0
Heavy machinery	2.272	0.102	0	0	0	0	33.655	63.971	0
Transportation equipment	0.733	0.031	0	0	0	0	52.993	46.243	0
Industrial plants	0.446	0.013	0	0	0	0	85.090	14.451	0
Utility plants	0	0	0	0	0	0	94.225	5.775	0
Farmland	94.475	5.525	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	41.519	0	58.481
Labor services	0.667	0.013	1.880	0.344	23.409	1.642	72.045	0	0
Southern Plains:									
Corporate--									
Computers/office equipment	0	0	2.303	0.602	16.372	8.482	68.747	3.493	0
Service and furnishing equipment	0	0	3.985	1.042	13.460	2.584	72.532	6.396	0
Heavy machinery	0	0	6.055	1.585	28.543	12.420	21.921	29.476	0
Transportation equipment	0	0	0.861	0.225	2.900	0.612	47.305	48.097	0
Industrial plants	0	0	2.772	0.600	8.419	2.548	74.024	11.637	0
Utility plants	0	0	0	0	0	0	91.130	8.870	0
Noncorporate--									
Computers/office equipment	0.125	0.017	0	0	0	0	94.763	5.095	0
Service and furnishing equipment	0.008	0.001	0	0	0	0	93.003	6.987	0
Heavy machinery	3.314	0.364	0	0	0	0	35.496	60.826	0
Transportation equipment	1.211	0.118	0	0	0	0	50.718	47.953	0
Industrial plants	0.519	0.043	0	0	0	0	87.678	11.760	0
Utility plants	0	0	0	0	0	0	88.617	11.383	0
Farmland	85.891	14.109	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	35.547	0	64.453
Labor services	0.449	0.029	1.767	0.342	19.558	4.434	73.421	0	0

Continued--

Table 4--Regional industry shares of factor value added, by capital type and labor--Continued

Region/ factor	Cash Farms	grains	Food	Beverages, tobacco	Manu- facturing	Chemicals, rubber, plastic	Services, mines, trade	Construc- tion	Owner-occupied shelter
<i>Percent of industry value added</i>									
Southeast:									
Corporate--									
Computers/office equipment	0	0	1.979	0.970	17.284	7.679	67.785	4.303	0
Service and furnishing equipment	0	0	3.029	1.419	18.453	2.119	67.323	7.656	0
Heavy machinery	0	0	4.446	2.505	33.681	9.987	14.610	34.771	0
Transportation equipment	0	0	0.627	0.401	3.087	0.489	38.591	56.805	0
Industrial plants	0	0	1.950	0.961	13.031	4.206	63.498	16.354	0
Utility plants	0	0	0	0	0	0	99.450	0.550	0
Noncorporate--									
Computers/office equipment	0.071	0.002	0	0	0	0	92.880	7.048	0
Service and furnishing equipment	0.004	0	0	0	0	0	91.007	8.989	0
Heavy machinery	1.507	0.028	0	0	0	0	27.827	70.638	0
Transportation equipment	0.571	0.009	0	0	0	0	46.082	53.338	0
Industrial plants	0.293	0.004	0	0	0	0	81.549	18.154	0
Utility plants	0	0	0	0	0	0	98.926	1.074	0
Farmland	97.525	2.475	0	0	0	0	0	0	0
Residential--									
Shelter	0	0	0	0	0	0	29.634	0	70.366
Labor services	0.482	0.008	1.677	0.466	21.123	3.212	73.032	0	0
United States:									
Capital services	0.368	0.077	2.511	0.905	12.203	3.566	47.295	21.683	11.393
Labor services	0.406	0.038	1.957	0.425	23.555	3.193	70.426	0	0

Figure 9

Regional per capita food manufacturing production

Percentage of Northern Plains per capita production

