Buying Local in Marshall County and Marshalltown, Iowa: An Economic Impact Assessment

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Introduction

One of the ways to increase the amount of economic activity in a region is to increase the purchases that are made from local suppliers of goods and services. The more businesses and people in an area purchase from local suppliers, the better it is for the economy, provided, of course, that both quality and value are not compromised by making a local selection. This short report highlights the economic development potential of increasing purchases of goods and services from local providers rather than providers outside of the county of analysis, in this instance – Marshall County, Iowa. County-wide values will then be apportioned to the City of Marshalltown.

The analysis relies on an input-output model (I-O) of the Marshall County economy. I-O models are detailed, county-level accountings of the transactions that occur within a county among its industries, institutions, and households. By tracking these transactions, we can discern the effects of growth, decline, or a reconfiguration of critical variables in the local economy. In this case we are analyzing all of the commodities that are imported into the region, and we are asking a very straightforward question: What potentially happens to the local economy when we substitute 5 percent of our goods and commodity imports with goods and services produced locally?

This report answers that question and is a community education service of the Department of Economics and the College of Agriculture at Iowa State University.

Basic Data and Adjustments

Table 1 demonstrates the dependence of the Marshall County economy on imported production inputs. This table lists the components of the $2.685 billion in industrial output in Marshall County in 2003, the latest county level data available. Industrial output is analogous to sales, or more precisely, it is the market value of all goods and service produced in the region. In making those sales, the industries and governments in the county made $1.521 billion in payments for production inputs and $1.164 billion in payments to value added, $747.18 million of which were payments to labor (employees and sole proprietors).

Of its $1.521 billion in production inputs, however, 1.1987 billion, or 79 percent, are estimated to have been purchased from suppliers from outside of Marshall County. Those imports could have come from a neighboring county, the remainder the state, the remainder of the nation, or from other countries. No matter, if they didn't come from Marshall County, they are imports.

Table 1. Private Sector Industrial Accounts

Total Industrial Output	2,685.12
Imported Production Inputs	1,198.67
Locally-Supplied Production Inputs	322.32
Payments to Value Added	1,164.13
Employees Wages	685.39
Proprietor Incomes	61.78
Returns to Investors	344.84
Indirect Government Taxes and Charges	72.12

Amounts in $ millions

There are two dimensions to the industrial imports and other spending that need to be addressed, however. First, the information in Table 1 contains all agricultural product imports, and as the county has a major meat packing industry, those values, plus other agricultural commodity imports, very strongly weight the data. To adjust this value, we have identified and removed the $369.5 million in agricultural imports that the region receives. Once done, we find that the region's non-agricultural industrial (or intermediate) imports are $829.2 million.

Second, these are not all of the imports that are purchased in the county. The Marshall County economy is much larger than just its industries. It also is home to spending by households and institutions that receive income from sources both outside and within the county economy. Those values are contained in Table 2. According to our model of the Marshall County economy, households and institutions purchased an additional $615.9 million in goods and services from outside of the county. This brings the total imports into the county to $1.8146 billion; excluding ag commodities, the total is $1.445 billion.

Table 2. Total Import Purchases

Type of Import	Total Commodity Imports
Intermediate (Industry)	1,198.67
Intermediate Without Ag. Commodities	*829.20*
Household and Institutional	615.90
Total	1,814.58

Amounts in $ millions

Were the county to realize an import substitution amount of 5 percent of that non-agricultural product import value, it would stimulate, potentially, $72.3 million in additional local sales. There is, however, a catch. <u>County industries and households cannot make import-substituting local purchases for goods and services if the industry that produces that commodity does not exist in the county</u>. Moreover, there are a host of specialized commodity imports that simply cannot, will not, or are otherwise highly unlikely to ever be produced in the region. As examples, the region purchases $16.4 million in refined petroleum products, over $26.3 million in automobiles and light truck manufactured goods, and $18 million in pharmaceuticals and medicines (all values are in producer prices, not retail).   Oil refineries, automobile plants, or drug manufacturers are not likely to locate in the region simply to satisfy regional demand.

Accordingly, in order to make this estimation plausible, we need to determine which imported commodities could realistically be substituted for by a local supplier. Stated more directly: you can't import substitute if there is no local producer. That means that we had to match up the commodity imports with the list of industries that actually exist in the region.   Table 3 lists those values. Of the $1.815 billion in total regional imports, 603.14 million, or just a third, are commodities for which a producing industry was in evidence in the Marshall County economy (we are excluding ag commodities as we assume that it is not possible to substantially increase current agricultural productivity in the region). Taking 5 percent of that amount we get $30.157 million in potential import substitutes in the region.

Table 3. Imports Produced Regionally by Type of Importing Entity

Imports	Intermediate	Household and Institutional	Total
Nonagricultural Commodities Produced in the Region	374.99	228.15	603.14
Nonagricultural Commodities Not Produced in the Region	454.21	379.28	833.49
All Agricultural Commodity Imports	369.47	8.47	377.94
Total Commodity Imports	1,198.67	615.90	1,814.58

Amounts in $ millions

The Impacts

Two separate input-output analyses were conducted: one for the intermediate imports – those that are demanded by industries in the region, and one for the household and institutional import demands. In each analysis we identified the top 20 commodity imports and used those 20 commodities to represent the potential economic impacts of all commodity substitutes. We proportionately adjusted each commodity's value so that the sum of the 20 chosen representative commodities for both sets of analysis represented our 5 percent total value, or $30.157 million in import-substituted local sales.

Tables 4 through 6 detail the impacts. The format of the tables is identical: impacts are compiled first for Marshall County, and then an apportionment is made for the City of Marshalltown. We first identify intermediate import substitutes (Table 4), household and institutional import substitutes (Table 5), and total values (Table 6). In Table 4, the intermediate import substitutes, the apportioning factor was the average of the number of firms in Marshalltown as a fraction of the total number of firms in the county, and the amount of estimated retail and service sales in Marshalltown as a fraction of the county total. The apportioning value for Table 5 was the average of the population of Marshalltown divided by the population of Marshall County and the fraction of retail and service sales in Marshalltown compared to the county. Table 4 is weighted by business firms and total sales; Table 5 is weighted by population and total sales. Table 6 is simply the sum 4 and 5.

Some explanation of the values is also in order. The first value is *output* (*or total industrial output*). Output is analogous to gross sales.* *Labor income* is made up of the wages and salaries paid to workers and the normal returns to sole proprietors (farmers, shopkeepers, etc.). *Jobs* represent the number of positions in an economy, not necessarily the number of workers as workers can have more than one job.

The tables also list four dimensions of economic impact. The *direct effects* refer to the import-substituting purchases (the 5 percent) that are made of the 20 representative industries in the model (there is a different set of industries for industries and for households). When we make import substituting purchases from these firms, they, in turn, require increments of inputs on their own. Those locally supplied inputs are called the *indirect effects*. When workers in the direct and the indirect industries receive their paychecks, they convert their labor incomes into household spending. This spending creates the *induced effects*. The sum of the direct, indirect, and induced effects are the *total economic effects* or economic impacts.

The table also lists *multipliers*. A multiplier is merely the ratio of the total economic effect or impact to the direct value – the total value divided by the direct value. An output multiplier of 1.31 in Table 4 means that for every dollar's worth of import substituted direct purchases in the region, an additional $.31 in output is generated. A labor income multiplier of 1.38 means that for every dollar's worth of labor income paid in the direct sector, an additional $.38 in labor income is supported in the indirect and induced sectors of the Marshall County economy. Finally, the jobs multiplier of 1.53 means that for every job in the direct sectors, 53/100ths of a job is sustained in the remainder of the economy.

In Table 4 we look at intermediate import substitutes. Five percent of the county total yielded $18.75 million in direct import-substituting local transactions. That would support $5.55 million in direct incomes to 148 jobs. To produce those

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sales requires an additional $3.2 million in locally-supplied inputs, paying 38 jobs $1.15 million in labor income. As workers in the region convert their earnings into household spending, they will cause $3.03 million in induced (or household) sales, yielding 41 more jobs and $985,410 in additional labor income to the induced workers. In total, import substitutes of intermediate goods and services will yield $24.95 million in output in the county, $7.7 million in labor incomes, and 226 jobs. Those values apportioned to the City of Marshalltown give $20.8 million in output, $6.4 million in labor income, and 189 jobs.

Table 4. Economic Impact of Intermediate Import Substitutes

Marshall County	Direct	Indirect	Induced	Total	Multiplier
Output*	18,749,503	3,171,415	3,031,060	24,951,977	1.331
Labor Income	5,555,880	1,146,891	985,410	7,688,181	1.384
Jobs	147.9	37.5	40.9	226.3	1.530

Marshalltown	Direct	Indirect	Induced	Total	Multiplier
Output*	15,628,720	2,643,545	2,526,552	20,798,817	1.331
Labor Income	4,631,125	955,995	821,392	6,408,513	1.384
Jobs	123	31	34	189	1.530

Retail and wholesale output represent margined values

Table 5 gives the household and institutional import substitute values. Those entities would make $11.4 million in direct, import-substituting purchases in the county to achieve the 5 percent import substitution goal. In so doing, they would support 114 direct sector jobs paying $3.3 million in labor income. This change would require $1.8 million in indirect inputs, supporting another 21 jobs and $672,619 in labor income in the supplying sectors. When workers spent their wages, they would add $1.8 million in induced transactions into the economy, adding another 23 jobs and $581,800 in labor incomes. In total, this would generate an additional $15.02 million in county-wide output, $4.54 million in labor income, and 159 jobs. Those values apportioned to the City of Marshalltown give $11.8 in total economic impact output, $3.6 million in labor income, and 125 jobs.

Table 5. Economic Impact of Household and Institutional Import Substitutes

Marshall County	Direct	Indirect	Induced	Total	Multiplier
Output*	11,407,350	1,826,154	1,789,627	15,023,131	1.317
Labor Income	3,284,956	672,619	581,800	4,539,374	1.382
Jobs	114.3	21.4	23.5	159.1	1.392

Marshalltown	Direct	Indirect	Induced	Total	Multiplier
Output*	8,941,322	1,431,378	1,402,748	11,775,448	1.317
Labor Income	2,574,818	527,213	456,027	3,558,057	1.382
Jobs	89.6	16.8	18.4	124.7	1.392

Table 6 combines the previous two tables. Were the county to fully realize a 5 percent import substitution goal, it would generate $30.156 million in additional local direct industrial output, support a total of 262 direct jobs making $8.8 million

in labor incomes. That enhanced local spending would spur another $5 million in supplying sector industrial output, supporting 59 workers and $1.82 million in incomes. Induced spending would increase by $4.8 million in the county, and require another 64 jobs paying $1.6 million. Total county-wide economic impacts would be $39.98 million in output, $12.23 million in labor incomes, and 385 jobs. Apportioned to the City of Marshalltown, we would see total output impacts of $32.6 million, 131 jobs, and $9.97 million in labor incomes.

Table 6. Total Import Substitutes Economic Impacts

Marshall County	Direct	Indirect	Induced	Total	Multiplier
Output*	30,156,853	4,997,569	4,820,687	39,975,109	1.326
Labor Income	8,840,836	1,819,510	1,567,210	12,227,555	1.383
Jobs	262.1	58.9	64.4	385.4	1.470

Marshalltown	Direct	Indirect	Induced	Total	Multiplier
Output*	24,570,043	4,074,924	3,929,299	32,574,265	1.326
Labor Income	7,205,943	1,483,208	1,277,419	9,966,570	1.383
Jobs	212.8	48.0	52.5	313.4	1.472

* Retail and wholesale output represent margined values

Discussion

These values represent the maximum amount of economic activity that could be expected to accrue to the region and the City of Marshalltown were the area to achieve the 5 percent import substitution goal. Whether the 5 percent goal is realistic or not, however, is another matter.[*] Businesses, institutions, and households increasingly make purchases from spatially diverse sources. These purchases may or may not be more efficient and cost effective. Changing behaviors to focus on local purchasing opportunities will necessarily require public education of both the opportunity for the purchases and the localized beneficial economic outcomes that might accrue. In particular, the message may require proponents to urge participants to actively trade-off actual or perceived efficiencies or conveniences for a higher level of regional economic activity, which has beneficial regional multipliers, even if they as industries or individuals might initially view themselves as being worse off, marginally, for doing so.

This model is a simulation of how the regional economy is expected to react were the 5 percent goal achieved. If there is slack in the regional economy, as in excess production capacity or significant under-employment, income gains regionally ought to be realized, but expected job gains might not. Similarly, and realistically, local purchases only make sense to individuals and businesses if they perceive that they are no worse off for the decision or if the trade-offs make sense to

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[*] The data in Table 4 through Table 6 represent a 5 percent import substitute assumption. These factors are fixed for the estimation year so adjustments can be made by factor adjustment. Were the community and county to have a goal of 2.5 percent import substitutes, for example, the values in those tables would merely be divided by two.

them both socially and economically. If local goods and services are more costly or are offered in only limited selections, then the propensity to buy locally will diminish. This model cannot adjust for these important considerations. The model is an accounting framework, not a behavioral model.

Notably, all categories of multipliers are generally moderate to low in this analysis. The reason is that linkages in the region are comparatively lean – while there is a reasonably diverse mix of industries in the region, the region still has a large amount of commodity imports. Enhanced local spending in the region does not yield the kind of local economic impact payoffs as would be the case in a larger economy with a more diverse and rich set of industries, such as Des Moines.

A buy local campaign may assist in boosting those linkages, but it will take time. That effort would also be working against the urbanization and specialization forces that are already prominent in Midwestern economies that are yielding in places like Marshall County and Marshalltown, Iowa, incrementally lower and lower regional economic multipliers annually.

Finally, many people assume that this effort is designed to re-capture retail sales leakages, as they appear to be the most visible sign to most people of commodity or service imports. Consumers of this information need to be aware that the scope of total imported commodities by industries and households dwarfs mere retail sales leakages that local chambers of commerce or store merchants might typically bemoan. Much greater multipliers in a region accumulate when industries buy from one-another than if households buy from local retailers. This is especially true when industries are buying specialized commodity and service inputs from local suppliers, not just the margined wholesale goods.

This analysis considers two potentials: increased industrial purchases of locally supplied inputs, and increased household purchases of all goods and services that they import, not just retail sales. Retail sales substitutes are a relatively small fraction of the total. Retaining retail sales are important, and should not be discounted, but they are only part of an entire "buy local" campaign.

Appendix: Top 20 Industrial (Non-Ag) Commodity Imports for Marshall County – Dollar Amounts in Millions

Sector	Intermediate Imports
Wholesale trade	63.124840
Real estate	43.061540
AC- refrigeration- and forced air heating	42.877680
Management of companies and enterprises	37.039790
Iron and steel milled productss	23.163390
All other miscellaneous professional and technical	13.817420
Nondepository credit intermediation and related a	13.059540
Insurance carriers	11.200170
Telecommunications	11.141220
Monetary authorities and depository credit interme	10.200200
Legal services	9.518990
Management consulting services	8.958040
Securities- commodity contracts- investments	8.140460
Advertising and related services	7.917960
Automotive equipment rental and leasing	7.692170
Truck transportation	7.669760
Accounting and bookkeeping services	7.273730
Other animal food manufacturing	7.209660
Air transportation	6.725060
Machine shops	6.101200

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Appendix: Top 20 Institutional (Non-Ag) Commodity Imports for Marshall County – Dollar Amounts in Millions

Sector	Institutional Imports
Real estate	30.98305
Wholesale trade	27.39539
Insurance carriers	23.13604
Telecommunications	16.73304
Cut and sew apparel manufacturing	13.52140
Monetary authorities and depository credit interme	11.87210
Food services and drinking places	11.06828
Securities- commodity contracts- investments	8.75888
Legal services	8.19571
Other ambulatory health care services	7.89345
Motor vehicle and parts dealers	7.09516
Hospitals	6.72535
Automotive equipment rental and leasing	6.25210
Air transportation	6.00373
Soft drink and ice manufacturing	5.99423
Commercial and institutional buildings	5.18964
Clothing and clothing accessories stores	5.04083
Offices of physicians- dentists- and other health	4.99684
Nonstore retailers	4.77494
Automotive repair and maintenance- except car wash	4.54089