Economic Impacts of U.S. Agricultural Exports to Cuba

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Executive Summary

- The economic impacts of expanded U.S. agricultural exports to Cuba were estimated using an input-output model of the United States. Output, income, value added, and employment were estimated for all 50 states and 22 commodity sectors.

- Under the most restrictive trade scenario, it was estimated that $37.5 million in U.S. agricultural exports to Cuba would generate an additional $84 million in business sales, $25 million in household income, $47 million in Gross Domestic Product, and 1,000 new jobs. These estimates reflect the status quo, with no additional sanctions removal, restricted investment, a continuation of a centrally planned Cuban economy, and little or no increase in U.S. tourism to the island.

- Under the Moderate Export Growth Forecast, U.S. agricultural exports reach $411 million. An additional $919 million in economic output, or business sales, is stimulated in the U.S. economy. Household incomes increase by $273 million, while Gross Domestic Product associated with these exports would grow by $517 million. An additional 10,656 jobs would be created. States sharing the major benefits of this increased economic activity would be Arkansas, Iowa, California, Texas, Nebraska, Kansas, Illinois, Minnesota, North Dakota, and Mississippi. The benefits are quite widespread, however, with the top 27 states receiving output gains exceeding $10 million each.

- Under the High Export Growth Forecast, U.S. agricultural exports would reach $1.24 billion. Exports to Cuba are estimated to stimulate an additional $3.6 billion in total economic output, with $2.8 billion in direct and indirect impacts and another $818 million in household income. Total GDP attributable to increased agricultural exports to Cuba is estimated to be $1.6 billion. The top 24 exporting states are each estimated to have additional Gross State Product (GSP) exceeding $20 million. Total employment gains will approach 31,262 jobs, with the top 12 export states experiencing a minimum of 1,000 jobs each.

- Louisiana and Missouri replace Kansas and North Dakota as top ten export states under the High Export Growth Forecast, with the other states remaining the same. Arkansas leads all states in exports to Cuba with a total forecast value of $167 million, followed by California at $98 million, Iowa at $71 million, Louisiana at $66 million, and Texas at $54 million. Major commodity exports to Cuba are rice, valued at $300 million, soybeans and products ($179 million), wheat and flour ($140 million), chicken meat ($100 million), softwood logs and plywood ($97 million), corn ($80 million), agricultural requisites ($75 million), dry milk ($47 million), dry beans ($45 million), and cotton ($12 million).

Summary Table: Estimated Economic Impacts of U.S. Agricultural, Fishery, Forest, and Requisite Product Exports to Cuba

Option	Forecast Exports *($1,000)*	Estimated Economic Impacts			
		Output	Income *($1,000)*	Value Added	Employment *(Jobs)*
Option 1: Low Export Growth	$37,500	$84,445	$24,987	$47,366	995
Option 2: Moderate Export Growth	$410,800	$919,165	$272,298	$516,925	10,656
Option 3: High Export Growth	$1,240,180	$2,773,991	$817,811	$1,551,704	31,262
Option 3 Top Ten States					
Arkansas	$167,263	$390,312	$113,041	$204,100	3,797
California	$98,119	$222,525	$65,305	$121,346	2,219
Iowa	$70,764	$160,051	$45,961	$89,157	1,946
Louisiana	$65,634	$144,603	$42,434	$78,668	1,369
Texas	$53,857	$125,520	$36,981	$67,952	1,443
Illinois	$52,939	$115,815	$32,998	$66,216	1,435
Mississippi	$50,932	$119,407	$35,322	$63,584	1,242
Minnesota	$45,880	$98,872	$29,031	$57,912	1,259
Nebraska	$40,843	$90,767	$26,671	$51,809	1,164
Missouri	$39,826	$90,340	$25,940	$49,589	1,024

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Parr Rosson and Flynn Adcock[1]

Introduction

Interest in U.S.-Cuba agricultural trade increased with the passage of the Trade Sanctions Reform and Export Enhancement Act of 2000 (October 2000) allowing for U.S. food and medical exports to Cuba under specified conditions. Many private and public sector analysts estimate that U.S. agricultural exports to Cuba could range from a low of $25 million up to $1 billion as trade expands. U.S.-Cuba trade patterns prior to the revolution and subsequent trade embargo will shape future trade patterns, along with U.S. trade with other Caribbean countries and the agricultural production potential in Cuba (USDA, Economic Research Service). Because of this optimism, many U.S. agricultural businesses and farm organizations view Cuba as a potential new market with significant agricultural export opportunities.

The purpose of this study is to estimate the economic impacts of expanded U.S. agricultural exports to Cuba on the U.S. economy. Economic output, income, value added, and employment are estimated for all 50 states and 22 commodity sectors. Three likely alternative export growth scenarios are analyzed to reflect potential impacts on economic growth if U.S. agricultural exports to Cuba expand. The effects of increased U.S. tourism to Cuba due to more liberal U.S. travel regulations are included.

Not all U.S. interests are supportive of these expanded trade ties, however. Some view the Trade Sanctions Reform and Export Enhancement Act as an appeasement of special interests in the United States who will gain as the Cuban market grows and U.S.

exports expand. Others are concerned that the legislation marks a major turning point in U.S.-Cuban relations that will lead to a softening of U.S. resolve to stifle the political regime of Fidel Castro. Still others believe that the embargo is finally working and to lift it now would only add strength to the Castro regime and betray the faith of those Cubans who have supported U.S. policy since the revolution (Heritage Foundation).

Prior to the U.S. trade and financial embargo imposed on Cuba in February 1962, U.S. owners controlled about 25 percent of all land in Cuba (USDA, ERS). Much of the Cuban livestock industry was dependent on U.S. investment. Cuba imported substantial quantities of grain and feeds to support the livestock sector. Cuba was also an important market for U.S. pork, black beans, rice, poultry feeds, and soybean meal.

Cuba's current trade patterns reflect the likely composition and potential size of the market for imported food and agricultural products. Total Cuban agricultural imports were valued at $545 million in 1999 (FAO). Agricultural requisite imports, such as fertilizer, insecticides, and farm machinery, were valued at $251 million. Cuban grain and grain products imports, valued at more than $280 million in 1999, have accounted for about half of total agricultural imports in recent years (USDA, FAS). While the European Union supplies 90 percent of the wheat, Canada was a major source until recently, while Vietnam and China have become key suppliers of rice. Argentina and China are major sources of $100 million in oilseeds, supplying mainly protein meals and vegetable oil over the last five years. Poultry meat, mostly chicken, accounts for 40 percent of all meat consumption in Cuba, with about one-quarter of the total coming from

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Canada and France. While Cuba has potential to increase its own production of some fresh produce, fresh potatoes, canned fruits and vegetables, apples, dehydrated vegetables, and wine imports were valued at $69 million.

With expanded trade, it is likely that Cuba will become a larger market for rice, feed grains, oilseeds, beans, wheat flour, animal products, fertilizers, forest products, herbicides and pesticides, and farm machinery from the United States. Cuban imports of dry milk, canned fruits and vegetables, and other processed foods would likely increase as trade expands. It is expected that beef and pork imports, while currently small, will be more important as the tourist industry expands and demand for higher quality food increases. Under freer trade and investment, Cuba could again become a major U.S. source of sugar, citrus, fresh vegetables and tropical fruits, seafood, and tobacco.

In the early 1990s, tourism was Cuba's second largest earner of foreign exchange, behind the sugar industry. By 1996 more than 1.0 million tourists visited Cuba, spending $1.3 billion and passing sugar as the country's largest earner of foreign exchange. In 1999, tourist visits reached 1.6 million, while tourism expenditures were valued at $1.9 billion and resulted in an average expenditure per visitor of $1,188 (cubanews.com).

Methodology

The economic analysis used in this study includes three major components: assumption based forecasts of total U.S. agricultural exports to Cuba under alternative export growth scenarios; the estimation of agricultural exports to Cuba by each commodity sector and state; and the calculation of economic output, income, value added, and employment for each commodity sector and for each state using economic multipliers generated by an input-output model of the U.S. economy.

Assumption Based Forecasts of U.S. Agricultural Exports

A forecast of the U.S. dollar value of agricultural exports to Cuba for the major commodity sectors was developed using recent studies by the U.S. International Trade Commission (USITC), the Economic Research Service (ERS)-USDA, the Foreign Agricultural Service (FAS)-USDA, and selected industry sources. The USITC study incorporated estimates of U.S. exports based upon analyses by USITC economists and includes the results of studies done by the major commodity associations and FAS, USDA. Center for North American Studies (CNAS) analysts estimated exports for those sectors not having industry or FAS estimates and for commodities not included in the USITC study. Estimates of U.S. exports of cotton, dry beans, seafood, and agricultural inputs were adjusted by CNAS to reflect assumptions about potential U.S. market shares of the Cuban import market. Sectors added to the analysis were potatoes, sunflower oil, forestry products, and farm machinery.

State Agricultural Exports to Cuba

The value of agricultural exports from each state was estimated based on the share of production method used by the Economic Research Service, USDA. CNAS analysts calculated the state share of production for a particular sector using data from the National Agricultural Statistics Service (NASS), the U.S. Forestry Service, U.S. Milling and Baking News, the National Atmospheric and Oceanographic Administration (NOAA), the International Fertilizer Institute, and the International Fertilizer Development Council. This share was then multiplied by the value of U.S. agricultural

exports for that same sector to estimate the state exports. The following example illustrates how the value of chicken meat exports from Arkansas were calculated.

In 2000, Arkansas produced 5,861,000 pounds of chicken meat compared to 40,830,000 pounds of production for the United States. Arkansas' production was divided by total U.S. production to calculate a state share of national production equal to 14.355 percent. The value of Cuba's annual imports of chicken meat from the United States was estimated to reach $100 million dollars under Option 3. Arkansas' share of 14.355 percent was then multiplied by the $100 million in U.S. exports resulting in chicken meat exports from Arkansas to Cuba of $14.355 million dollars. This methodology was used to estimate the value of each state's exports to Cuba for each sector.

Three models were developed to forecast estimates of agricultural, fisheries, forestry, and agricultural requisite exports to Cuba. The first model, Option 1, reflects the status-quo and results in a relatively low level of U.S. agricultural exports to Cuba, estimated at $37.5 million per year. These results are based primarily upon analysis provided by the FAS/USDA. Assumptions for Option 1 are:

1) Trade is one-way, only allowing for U.S. exports of food and other agricultural products to Cuba under approved export license granted by the United States;
2) Cuba is not granted Normal Trade Relations (NTR) and Cuban products are not allowed into the United States;
3) U.S. firms are not allowed to use U.S. bank or government financing programs to support Cuban customers or financial institutions;

4) U.S. firms must sell directly to private sector businesses or importers in Cuba, limiting exports due to the major role of State Trading Enterprises (STEs) and the lack of private sector importing firms in Cuba;

5) The U.S. ban on travel to Cuba remains in place, thereby limiting tourism by U.S. citizens and retarding business development activities;

6) U.S. investment in Cuba is not allowed and Cuba remains a centrally planned economy.

The second model, Option 2, reflects the removal of U.S. economic sanctions on Cuba and limited economic growth. U.S. agricultural exports are estimated to reach $411 million annually. These estimates were prepared by the USITC and were supplemented by CNAS to incorporate sectors not analyzed in the USITC report. Option 2 reflects trade growth under the continuation of a centrally planned economy in Cuba. Assumptions for Option 2 include:

1) An absence of U.S. sanctions on Cuba, thereby relaxing assumptions 1-5 under Option 1, but Cuba retains a centrally planned economy;

2) The USITC assumes that basic economic conditions and the foreign investment climate in Cuba do not significantly change resulting in limited growth in production and trade potential;

3) The overall level of Cuban trade does not change except for modest growth related to increased tourism which will generate additional foreign exchange used to purchase imports from the United States and other countries;

4) The USITC report indicates that U.S. tourism industry sources estimate that one million U.S. tourists will visit Cuba annually;

5) U.S. exports to Cuba will occur at the expense of current Cuban trading partners.

6) The assumed U.S. market shares for potatoes (35 percent), sunflower oil (35 percent), soybeans (50 percent of industry estimate), softwood lumber and plywood (33 percent), and farm machinery (10 percent) are as noted in parentheses.

The third model, Option 3, reflects the removal of U.S. economic sanctions on Cuba, an optimistic economic and trade growth scenario, and estimates that U.S. agricultural exports will reach $1.24 billion annually. Option 3 represents trade gains that could be achieved based upon U.S. industry estimates. Estimates of economic growth, changes in per capita income levels in Cuba, and changes in investment policy were not reported for these industry estimates. Assumptions about Cuba remaining a centrally planned economy and impacts on the expected economic growth path are not reported. These estimates, however, are based upon industry, government, and academic expert analyses. The major assumptions behind Option 3 are:

1) The absence of U.S. sanctions as in Option 2;

2) Use of the most optimistic export potential estimates provided by USDA, academia, and U.S. industry.

3) Tourism growth up to one million U.S. visitors to Cuba per year;

4) The U.S. market shares for seafood (30 percent), dry beans (70 percent), potatoes (75 percent), sunflower oil (85 percent), cotton (100 percent),

fertilizers (60 percent), pesticides (50 percent), and farm machinery (50 percent) are as noted in parentheses.

Economic Impacts

Results from the IMPLAN model were used to estimate the economic impacts of U.S. agricultural exports to Cuba. Input-output analysis multipliers from IMPLAN were used to estimate the effects of an increase in U.S. agricultural exports on economic activity, value added, and employment. IMPLAN is a computer algorithm of a system of equations representing 528 sectors of the U.S. economy and specifying interrelationships among sectors (Olsen, et al.). IMPLAN captures intermediate sales among sectors and households, as well as the value added to the economy from any specified activity, in this case, agricultural exports to Cuba.

The IMPLAN model calculates multipliers for the United States, which were used for this study. The model calculates the impact of a change in the output of one sector on the output requirements of other sectors. Multiplier estimates are expressed as the impact on an economic variable due to a change in final demand, in this case exports to Cuba. IMPLAN multipliers were used to estimate the impacts of exports on states and sectors of the each state's economy.

Multipliers are usually expressed as the impact of a $1.00 change in final demand, or U.S. agricultural exports to Cuba in this study, on a selected economic variable, such as household income. The exception to this is for employment, which is calculated as the number of jobs attributable to a $1.0 million increase in exports. Total economic effects are the sum of the direct and indirect effects of a final demand change. The effects include the change in output of the sector being analyzed, such as wheat for example, and

the indirect effects, which capture the change in output for all other sectors of the economy producing inputs or supplying services or products to produce wheat. The impacts of additional exports on household incomes are referred to as the induced effects of a change in final demand and reflect the impacts of increased household incomes on the sector being analyzed and all other sectors of the economy. Economic impact estimates in this study include the effects of direct, indirect, and income impacts.

Multipliers used in this study are reported in Table 1. For example, the output multiplier for wheat was 1.83, indicating that for each additional dollar of wheat exports, another $0.83 was required to support the production of wheat, the purchase of wheat inputs, and the harvest, transportation, and trade of wheat throughout the economy. This results in output for wheat of $1.83. The household income multiplier for wheat was 0.53, indicating that for every additional dollar of wheat exports, household incomes would rise by another $.53 reflecting increased wages, salaries, profits, and rents. The value added multiplier for wheat was 1.199 which means that for every additional dollar of wheat exports, economic returns to wheat production and all other sectors would increase by $1.20. Finally, the employment multiplier for wheat was 27.39, meaning that for each additional $1.0 million in wheat exports, an additional 27 jobs were created throughout the U.S. economy.

Economic activity, or output, is an estimate of the change in total business sales by all sectors of the economy in a specified state attributable to a one-time increase in exports. Increased exports to Cuba stimulate farmers' purchases of fertilizer, fuel, agricultural chemicals, and machinery to produce additional crops. In addition, economic activity increases in food and fiber manufacturing, transportation, and wholesale/retail

Table 1. Economic Impact Multipliers for U.S. Exports of Agricultural, Fishery, Forest, and Requisites Products to Cuba, 2000

Sector	Output[1]	Income	Value Added	Employment
	Per $1.00 of Exports			*Per $1 Million in Exports*
Beef Cattle Production	2.425	0.764	1.327	43.072
Hog Production	2.575	0.657	1.275	34.377
Beef and Pork Processing	2.988	0.736	1.300	32.958
Chicken Meat	2.924	0.848	1.389	33.495
Dry Milk	2.389	0.667	1.271	21.410
Cheese	2.774	0.755	1.329	25.821
Wheat	1.827	0.530	1.199	27.393
Wheat Flour	2.212	0.727	1.287	23.991
Rice	2.296	0.662	1.199	21.136
Corn	1.860	0.575	1.219	25.738
Soybeans	1.767	0.608	1.265	28.923
Soybean Products	2.570	0.660	1.253	24.799
Fats and Oils	2.415	0.657	1.191	20.839
Sunflower Oil	2.421	0.717	1.260	25.356
Vegetables	1.734	0.713	1.329	26.157
Cotton	1.848	0.680	1.298	24.895
Seafood	1.150	0.524	1.262	20.544
Sawn Wood and Plywood	2.157	0.701	1.279	24.931
Fertilizers	2.121	0.600	1.134	16.178
Pesticides	1.880	0.608	1.219	15.858
Farm Machinery	1.901	0.744	1.268	20.511

[1] Output includes both the direct and indirect effects of an increase in exports
Source: IMPLAN 1997, Updated by CNAS to 2000

trade. Together, this added business activity results in greater output in a state or regional economy.

The impact of exports on total household income was estimated. The change in total household income from all sources (wages, salaries, profits, and rents) due to a change in exports was calculated using IMPLAN multipliers.

Value added estimates also were calculated using IMPLAN. Value added represents an estimate of the change in total economic returns due to the employment of

all resources of production in the economy attributed to a change in exports for a given sector. Value added represents the final market value of all goods and services produced within a state. It is the equivalent to Gross State Product (GSP) for each state or Gross Domestic Product (GDP) for the nation when summed across all states.

Finally, employment was estimated as the change in total number of jobs in the state or sector resulting from an increase in exports. Employment is summed across sectors and states to derive the total jobs for the United States that can be attributed to increasing agricultural exports to Cuba.

Input-output analysis assumes that all prices and technology remain fixed. Other assumptions are that the forecasts of final demand, or exports to Cuba, are reasonable and accurate. If the final demand for the model changes, then all of the estimated economic impacts would also be different in magnitude. All multipliers used in this study were updated from the 1997 IMPLAN model to reflect labor productivity and price changes through the year 2000. Each multiplier used in this study was adjusted by a factor of .966 to account for labor productivity growth of 7.9 percent and a 4.9 percent rise in the GDP implicit price deflator between 1997 and 2000.

Results

Option 1: Low Export Growth Forecast (Current Situation)

U.S. agricultural exports to Cuba were allocated across states based upon the share of national production for the selected commodity sectors analyzed in each state. Total U.S. agricultural exports to Cuba for Option 1 (Low Export Growth Forecast) were forecast to reach $37.5 million (Table L-1). The same information is shown in alphabetical order in Table L-2. Arkansas ranked number one with estimated exports of

$3.3 million, followed by Iowa ($2.5 million), California ($2.2 million), Texas ($2 million), Nebraska, Illinois, and Kansas ($1.9 million each), Minnesota ($1.7 million), North Dakota ($1.6 million), and Mississippi ($1.3 million). Together, these top 10 states represent about one-half of total forecast value of U.S. agricultural exports to Cuba. Major sectors accounting for the majority of these exports would be the soybean complex (soybeans, soybean meal and soybean oil), wheat and flour, softwood sawn logs, and chicken meat (L-3).

The total economic output resulting from U.S. agricultural exports to Cuba under Option 1 is estimated to be $84 million (L-1). This output represents the increased economic activity or business sales accruing to the economy due to increased exports to Cuba. Arkansas receives $7.8 million of the increase in output, followed by Iowa ($5.8 million), California ($4.9 million), Texas ($4.7 million), and Nebraska ($4.4 million). Sectors receiving the largest increase in output would be the soybean complex, rice, wheat and wheat flour, chicken meat, and softwood sawn logs, together accounting for about 68 percent of the total increase in economic output for the United States (L-3).

Household income generated by additional exports to Cuba was estimated at $25 million for the United States (L-1). Households in Arkansas, Iowa, California, Texas, and Nebraska gained the most income, while Hawaii, Connecticut, Rhode Island, Nevada, and Vermont gained the least income. Incomes for the top five states ranged from $1.3 million up to $2.3 million. For the bottom five states household income increases ranged from $1,000 to $5,000. Households incomes would increase the most for those linked to the soybean complex, rice, softwood sawn logs, wheat and wheat flour, and chicken meat, with income increases ranging from $2.0 million to $3.2 million (L-3).

The additional value added throughout the U.S. economy or Gross Domestic Product (GDP), resulting from $37.5 million in agricultural exports to Cuba was estimated to be $47.4 million (L-1). Value added by state, or Gross State Product (GSP) ranged from a high of $4.1 million for Arkansas to a low of $2,000 for Hawaii. Value added by sector is $5.8 million for rice, $5.5 million for soybean meal, $5.3 million for softwood logs, $4.6 for chicken meat processing, and $4.3 million for soybeans (L-3). Other important gains in value added would accrue to animal fats and oils ($3.6 million), dry beans ($2.6 million), beef ($2.3 million), and pork ($2.2 million). Cheese, seafood, and potatoes would experience the least growth in value added.

Nearly 1,000 jobs would be created in the United States as U.S. agricultural exports reach the initial forecast level in Option 1 (L-1). Eighty of these jobs would be located in Arkansas, while Iowa, California, Texas, Nebraska, Illinois, Kansas, and Minnesota would experience employment increases from 46 jobs to 69 jobs. Wheat and flour, chicken meat processing, soybean production and soybean meal and oil, rice production, and softwood sawn logs would receive most of the benefit from increased employment, accounting for 65 percent of the total increase in jobs due attributed to increased exports to Cuba (L-3). Job increases for these sectors range from 98 to 114.

While detailed results by state are discussed for Options 2 and 3, this was not done for Option 1 due to the extremely low level of potential exports and estimated economic impacts. The results by state and sector are negligible.

Table L-1: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by State in Descending Order of Export Value

State	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Arkansas	$3,329	$7,816	$2,281	$4,121	80
Iowa	$2,508	$5,762	$1,657	$3,177	69
California	$2,209	$4,883	$1,477	$2,757	52
Texas	$2,019	$4,719	$1,384	$2,543	53
Nebraska	$1,922	$4,405	$1,272	$2,408	51
Illinois	$1,896	$4,237	$1,200	$2,376	51
Kansas	$1,895	$4,171	$1,168	$2,329	50
Minnesota	$1,703	$3,695	$1,088	$2,150	46
North Dakota	$1,554	$2,967	$982	$1,963	42
Mississippi	$1,314	$3,085	$932	$1,676	34
Missouri	$1,141	$2,578	$742	$1,435	31
Louisiana	$1,107	$2,414	$727	$1,356	25
Georgia	$1,067	$2,665	$812	$1,420	32
Washington	$1,064	$2,183	$689	$1,343	28
North Carolina	$1,059	$2,601	$762	$1,385	32
Indiana	$1,007	$2,237	$635	$1,266	28
South Dakota	$962	$2,111	$611	$1,205	26
Ohio	$857	$1,836	$527	$1,075	23
Alabama	$816	$2,060	$628	$1,088	24
Oregon	$727	$1,526	$493	$925	19
Colorado	$688	$1,483	$450	$863	18
Michigan	$685	$1,339	$452	$882	18
Idaho	$631	$1,228	$410	$803	17
Oklahoma	$556	$1,229	$354	$704	17
Wisconsin	$518	$1,206	$343	$650	14
Montana	$443	$858	$266	$550	12
Pennsylvania	$420	$1,003	$280	$535	11
Virginia	$371	$885	$262	$484	11
Kentucky	$351	$823	$236	$451	10
South Carolina	$344	$790	$246	$446	9
Tennessee	$292	$659	$194	$377	8
Florida	$272	$598	$194	$357	8
Maryland	$224	$567	$165	$296	7
New York	$197	$384	$119	$254	5
Deleware	$151	$412	$120	$205	5
Maine	$142	$292	$98	$182	4
Arizona	$95	$200	$62	$122	3
Wyoming	$88	$168	$62	$116	3
Utah	$82	$179	$51	$106	2
New Mexico	$61	$136	$41	$79	2
West Virginia	$37	$103	$30	$51	1
New Jersey	$37	$68	$21	$46	1
Massachusetts	$28	$48	$16	$36	1
Alaska	$27	$58	$19	$35	1
New Hampshire	$25	$53	$17	$32	1
Vermont	$23	$51	$16	$30	1
Nevada	$8	$16	$5	$10	0
Rhode Island	$5	$6	$3	$7	0
Connecticut	$4	$7	$2	$5	0
Hawaii	$1	$4	$1	$2	0
Unallocated	$537	$1,641	$383	$656	8
TOTAL U.S.	**$37,500**	**$84,445**	**$24,987**	**$47,366**	**995**

Table L-2: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by State in Alphabetical Order

State	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Alabama	$816	$2,060	$628	$1,088	24
Alaska	$27	$58	$19	$35	1
Arizona	$95	$200	$62	$122	3
Arkansas	$3,329	$7,816	$2,281	$4,121	80
California	$2,209	$4,883	$1,477	$2,757	52
Colorado	$688	$1,483	$450	$863	18
Connecticut	$4	$7	$2	$5	0
Deleware	$151	$412	$120	$205	5
Florida	$272	$598	$194	$357	8
Georgia	$1,067	$2,665	$812	$1,420	32
Hawaii	$1	$4	$1	$2	0
Idaho	$631	$1,228	$410	$803	17
Illinois	$1,896	$4,237	$1,200	$2,376	51
Indiana	$1,007	$2,237	$635	$1,266	28
Iowa	$2,508	$5,762	$1,657	$3,177	69
Kansas	$1,895	$4,171	$1,168	$2,329	50
Kentucky	$351	$823	$236	$451	10
Louisiana	$1,107	$2,414	$727	$1,356	25
Maine	$142	$292	$98	$182	4
Maryland	$224	$567	$165	$296	7
Massachusetts	$28	$48	$16	$36	1
Michigan	$685	$1,339	$452	$882	18
Minnesota	$1,703	$3,695	$1,088	$2,150	46
Mississippi	$1,314	$3,085	$932	$1,676	34
Missouri	$1,141	$2,578	$742	$1,435	31
Montana	$443	$858	$266	$550	12
Nebraska	$1,922	$4,405	$1,272	$2,408	51
Nevada	$8	$16	$5	$10	0
New Hampshire	$25	$53	$17	$32	1
New Jersey	$37	$68	$21	$46	1
New Mexico	$61	$136	$41	$79	2
New York	$197	$384	$119	$254	5
North Carolina	$1,059	$2,601	$762	$1,385	32
North Dakota	$1,554	$2,967	$982	$1,963	42
Ohio	$857	$1,836	$527	$1,075	23
Oklahoma	$556	$1,229	$354	$704	17
Oregon	$727	$1,526	$493	$925	19
Pennsylvania	$420	$1,003	$280	$535	11
Rhode Island	$5	$6	$3	$7	0
South Carolina	$344	$790	$246	$446	9
South Dakota	$962	$2,111	$611	$1,205	26
Tennessee	$292	$659	$194	$377	8
Texas	$2,019	$4,719	$1,384	$2,543	53
Utah	$82	$179	$51	$106	2
Vermont	$23	$51	$16	$30	1
Virginia	$371	$885	$262	$484	11
Washington	$1,064	$2,183	$689	$1,343	28
West Virginia	$37	$103	$30	$51	1
Wisconsin	$518	$1,206	$343	$650	14
Wyoming	$88	$168	$62	$116	3
Unallocated	$537	$1,641	$383	$656	8
TOTAL U.S.	**$37,500**	**$84,445**	**$24,987**	**$47,366**	**995**

Table L-3: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by Sector

Sector	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Beef	$1,692	$4,589	$1,268	$2,260	64
Pork	$1,692	$4,823	$1,205	$2,187	57
Chicken Meat	$3,288	$9,614	$2,789	$4,566	113
Dry Milk	$658	$1,571	$439	$836	14
Cheese	$116	$322	$88	$154	3
Wheat	$4,158	$7,596	$2,202	$4,986	114
Wheat Flour	$1,257	$2,296	$666	$1,618	30
Rice	$4,835	$11,100	$3,200	$5,799	102
Corn	$919	$1,709	$528	$1,119	24
Soybeans	$3,384	$5,982	$2,056	$4,280	98
Soybean Meal	$4,351	$11,191	$2,870	$5,454	108
Sunflower Oil	$435	$1,054	$312	$548	11
Fats and Oils	$2,998	$7,239	$1,969	$3,571	62
Dry Beans	$1,934	$3,354	$1,378	$2,570	51
Potatoes	$271	$470	$193	$360	7
Cotton	$677	$1,251	$461	$879	17
Seafood	$145	$167	$76	$183	3
Softwood Sawn Logs	$4,110	$8,865	$2,882	$5,254	102
Softwood Plywood	$580	$1,252	$407	$742	14
TOTAL	**$37,500**	**$84,445**	**$24,987**	**$47,366**	**995**

Option 2: Moderate Export Growth Forecast

Under Option 2, the Moderate Export Growth Forecast, U.S. agricultural exports to Cuba are forecast to reach $411 million (Table M-1). Arkansas, Iowa, California, Texas, and Nebraska are the major gainers from increased exports, with totals ranging from $20-$35 million in agricultural exports each year. Other states for which significant levels of agricultural exports were estimated include Kansas, Illinois, Minnesota, North Dakota, Mississippi, Louisiana, Missouri, North Carolina, Georgia, Washington, and Indiana, all between $10-20 million per year. States with a moderate level of exports are South Dakota, Ohio, Alabama, Oregon, Colorado and Michigan with totals from $7-$10 million. The top commodity exports are rice, soybean meal, wheat, softwood sawn logs, soybeans, and chicken meat. Other important products exported include animal fats and oils, dry beans, beef, pork, fertilizers, pesticides, and farm machinery.

Total economic output due to increased U.S. exports is estimated to reach $919 million under Option 2 (M-1). State economic output ranges from $81 million for Arkansas to a low of $38,000 for Hawaii. Rice, the soybean complex, chicken meat, wheat and wheat flour, and softwood logs represent the sectors with the largest gains in output, ranging from $92-$177 million. Fertilizer exports generate an additional $23 million in output, while farm machinery, primarily tractors, is estimated to generate another $15 million.

Estimated total U.S. household income increases due to export growth under Option 2 is $272 million (Table M-1). Income estimates for Option 2 range from a low of $10,000 for Hawaii to a high of $24 million for Arkansas. In fact, the top 10 states account for 51 percent of the total household income earned from exports to Cuba.

Arkansas, Iowa, California, Texas, Nebraska, Illinois, Kansas, Minnesota, North Dakota, and Mississippi are states with the largest gains in household income. Rice, softwood logs, soybean meal, chicken meat, and wheat and wheat flour are the top five sectors experiencing income gains from $29 million for soybean meal to $33 million for rice attributed to increased exports (Table M-3). Farm machinery and phosphate fertilizer exports result in additional income gains of $4.9 million and $4.1 million, respectively.

Total value added, or GDP, due to increased exports under Option 2 increases to $517 million (Table M-1). The top ten states account for 56 percent of this additional GDP. Arkansas, Iowa, California, Texas, and Nebraska experience large gains in GSP, ranging from $25-$43 million. Major gains in value added occur for the rice sector ($60 million), soybean meal ($56 million), softwood logs ($54 million), wheat and wheat flour ($68 million), and chicken meat ($47 million) (Table M-3). Another $12 million in GSP is generated by exports of fertilizers, while farm machinery represents gains of $10 million.

A total of 10,656 jobs would be created from U.S. agricultural exports to Cuba of $411 million under Option 2 (Table M-1). Major gains in state employment are estimated to occur in Arkansas (829 jobs), Iowa (723 jobs), Texas (562 jobs), California (539 jobs), and Nebraska (529 jobs). About 52 percent of all new jobs attributed to additional exports to Cuba are created in the top ten states. Major employment gains by sector occur for wheat and wheat flour (1,490 jobs), chicken meat (1,170 jobs), soybean meal (1,116 jobs), softwood logs (1,059 jobs), rice (1,057 jobs), soybean production (1,012 jobs), animal fats and oils (646 jobs), beef (663 jobs), pork (585 jobs), and dry beans (523 jobs).

Table M-1: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by State in Descending Order of Export Value

State	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Arkansas	$34,558	$81,108	$23,671	$42,769	829
Iowa	$26,333	$60,430	$17,376	$33,307	723
California	$22,844	$50,493	$15,276	$28,516	539
Texas	$21,541	$50,207	$14,713	$27,047	562
Nebraska	$20,007	$45,834	$13,232	$25,051	529
Kansas	$19,863	$43,693	$12,234	$24,383	524
Illinois	$19,609	$43,819	$12,411	$24,571	529
Minnesota	$17,608	$38,216	$11,250	$22,230	480
North Dakota	$16,068	$30,678	$10,154	$20,296	430
Mississippi	$13,938	$32,642	$9,848	$17,725	360
Louisiana	$13,133	$28,528	$8,532	$15,926	285
Missouri	$11,799	$26,662	$7,668	$14,838	317
North Carolina	$11,559	$28,186	$8,245	$15,016	336
Georgia	$11,189	$27,880	$8,492	$14,858	331
Washington	$11,143	$22,866	$7,203	$14,041	288
Indiana	$10,418	$23,137	$6,567	$13,092	285
South Dakota	$9,953	$21,834	$6,319	$12,457	274
Ohio	$8,993	$19,264	$5,529	$11,263	245
Alabama	$8,624	$21,700	$6,607	$11,460	256
Oregon	$7,655	$16,059	$5,175	$9,719	195
Idaho	$7,273	$14,286	$4,685	$9,157	188
Florida	$7,241	$15,577	$4,658	$8,709	151
Colorado	$7,110	$15,335	$4,655	$8,923	190
Michigan	$7,085	$13,852	$4,676	$9,119	190
Oklahoma	$6,150	$13,554	$3,900	$7,729	180
Wisconsin	$5,356	$12,472	$3,547	$6,722	141
Montana	$4,579	$8,870	$2,753	$5,688	126
Pennsylvania	$4,339	$10,368	$2,891	$5,530	119
Virginia	$3,964	$9,435	$2,792	$5,155	115
Kentucky	$3,631	$8,510	$2,445	$4,664	107
South Carolina	$3,558	$8,182	$2,548	$4,618	98
Tennessee	$3,151	$7,096	$2,087	$4,045	90
Maryland	$2,316	$5,859	$1,706	$3,063	72
New York	$2,038	$3,976	$1,235	$2,623	55
Deleware	$1,566	$4,266	$1,237	$2,120	51
Maine	$1,467	$3,020	$1,012	$1,879	36
Wyoming	$1,096	$2,125	$749	$1,409	29
Arizona	$983	$2,065	$643	$1,264	28
Utah	$852	$1,851	$524	$1,093	26
New Mexico	$631	$1,401	$427	$814	18
West Virginia	$386	$1,069	$313	$528	13
New Jersey	$378	$707	$218	$478	10
Massachusetts	$288	$492	$165	$368	7
Alaska	$280	$604	$196	$358	7
New Hampshire	$258	$549	$179	$329	6
Vermont	$242	$525	$170	$310	6
Nevada	$79	$164	$53	$103	3
Rhode Island	$56	$66	$30	$71	1
Connecticut	$38	$74	$25	$49	1
Hawaii	$14	$38	$10	$19	1
Unallocated	$17,561	$39,541	$11,264	$21,425	316
TOTAL	**$410,800**	**$919,165**	**$272,298**	**$516,925**	**10,656**

Table M-2: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by State in Alphabetical Order

State	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Alabama	$8,624	$21,700	$6,607	$11,460	256
Alaska	$280	$604	$196	$358	7
Arizona	$983	$2,065	$643	$1,264	28
Arkansas	$34,558	$81,108	$23,671	$42,769	829
California	$22,844	$50,493	$15,276	$28,516	539
Colorado	$7,110	$15,335	$4,655	$8,923	190
Connecticut	$38	$74	$25	$49	1
Deleware	$1,566	$4,266	$1,237	$2,120	51
Florida	$7,241	$15,577	$4,658	$8,709	151
Georgia	$11,189	$27,880	$8,492	$14,858	331
Hawaii	$14	$38	$10	$19	1
Idaho	$7,273	$14,286	$4,685	$9,157	188
Illinois	$19,609	$43,819	$12,411	$24,571	529
Indiana	$10,418	$23,137	$6,567	$13,092	285
Iowa	$26,333	$60,430	$17,376	$33,307	723
Kansas	$19,863	$43,693	$12,234	$24,383	524
Kentucky	$3,631	$8,510	$2,445	$4,664	107
Louisiana	$13,133	$28,528	$8,532	$15,926	285
Maine	$1,467	$3,020	$1,012	$1,879	36
Maryland	$2,316	$5,859	$1,706	$3,063	72
Massachusetts	$288	$492	$165	$368	7
Michigan	$7,085	$13,852	$4,676	$9,119	190
Minnesota	$17,608	$38,216	$11,250	$22,230	480
Mississippi	$13,938	$32,642	$9,848	$17,725	360
Missouri	$11,799	$26,662	$7,668	$14,838	317
Montana	$4,579	$8,870	$2,753	$5,688	126
Nebraska	$20,007	$45,834	$13,232	$25,051	529
Nevada	$79	$164	$53	$103	3
New Hampshire	$258	$549	$179	$329	6
New Jersey	$378	$707	$218	$478	10
New Mexico	$631	$1,401	$427	$814	18
New York	$2,038	$3,976	$1,235	$2,623	55
North Carolina	$11,559	$28,186	$8,245	$15,016	336
North Dakota	$16,068	$30,678	$10,154	$20,296	430
Ohio	$8,993	$19,264	$5,529	$11,263	245
Oklahoma	$6,150	$13,554	$3,900	$7,729	180
Oregon	$7,655	$16,059	$5,175	$9,719	195
Pennsylvania	$4,339	$10,368	$2,891	$5,530	119
Rhode Island	$56	$66	$30	$71	1
South Carolina	$3,558	$8,182	$2,548	$4,618	98
South Dakota	$9,953	$21,834	$6,319	$12,457	274
Tennessee	$3,151	$7,096	$2,087	$4,045	90
Texas	$21,541	$50,207	$14,713	$27,047	562
Utah	$852	$1,851	$524	$1,093	26
Vermont	$242	$525	$170	$310	6
Virginia	$3,964	$9,435	$2,792	$5,155	115
Washington	$11,143	$22,866	$7,203	$14,041	288
West Virginia	$386	$1,069	$313	$528	13
Wisconsin	$5,356	$12,472	$3,547	$6,722	141
Wyoming	$1,096	$2,125	$749	$1,409	29
Unallocated	$17,561	$39,541	$11,264	$21,425	316
TOTAL	**$410,800**	**$919,165**	**$272,298**	**$516,925**	**10,656**

Table M-3: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by Sector

Sector	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Beef	$17,500	$47,460	$13,115	$23,374	663
Pork	$17,500	$49,879	$12,462	$22,612	585
Chicken Meat	$34,000	$99,424	$28,843	$47,216	1,170
Dry Milk	$6,800	$16,245	$4,535	$8,640	146
Cheese	$1,200	$3,329	$906	$1,595	31
Wheat	$43,000	$78,549	$22,770	$51,564	1,178
Wheat Flour	$13,000	$23,747	$6,884	$16,735	312
Rice	$50,000	$114,792	$33,087	$59,966	1,057
Corn	$9,500	$17,671	$5,459	$11,577	245
Soybeans	$35,000	$61,861	$21,263	$44,258	1,012
Soybean Meal	$45,000	$115,730	$29,683	$56,402	1,116
Sunflower Oil	$4,500	$10,896	$3,228	$5,671	114
Fats and Oils	$31,000	$74,865	$20,367	$36,930	646
Dry Beans	$20,000	$34,682	$14,250	$26,574	523
Potatoes	$2,800	$4,855	$1,995	$3,720	73
Cotton	$7,000	$12,939	$4,762	$9,086	174
Seafood	$1,500	$1,725	$787	$1,893	31
Softwood Sawn Logs	$42,500	$91,680	$29,800	$54,338	1,059
Softwood Plywood	$6,000	$12,943	$4,207	$7,671	150
Phosphate Fertilizer	$6,900	$14,635	$4,140	$7,825	114
Nitrogen Fertilizer	$4,100	$8,696	$2,460	$4,649	68
Pesticides	$4,000	$7,520	$2,432	$4,876	63
Farm Machinery	$8,000	$15,040	$4,864	$9,752	127
TOTAL	**$410,800**	**$919,165**	**$272,298**	**$516,925**	**10,656**

State Impacts by Sector

Sector impacts for each state are presented in tables M-4 through M-53. These impacts are described for the top ten agricultural export states based upon value of exports and for selected other states that exhibit export potential. Results are reported for the Moderate Export Growth Forecast. Results for all states and sectors are in Appendix A.

Arkansas: Arkansas' total exports are forecast to reach $34.6 million under the moderate export growth forecast. Rice and chicken meat are the big gainers in Arkansas from expanded exports to Cuba. Rice exports of $23 million account for two-thirds of total exports from the state (Table M-7). Other important exports are chicken meat ($4.9 million). Minor exports include softwood logs, soybean meal, soybeans, and cotton. Total economic output attributable to rice is $52.6 million, compared to $14.3 million for chicken. Household income impacts for rice are $15.2 million and $4.1 million for chicken, followed by $1.3 million for softwood logs. Gross state product, or value added, due to additional exports is estimated at $27.5 million for rice, $6.8 million for chicken, $2.4 million for softwood logs, $1.7 million for soybean meal, $1.4 million for wheat, and $1.3 million for soybeans. Of the 829 million new Arkansas jobs created by increased exports, 484 occur in rice, while 168 occur in chicken meat production. Jobs in softwood logs, wheat, soybean meal, soybeans, cotton, and other sectors total 175, or about 20 percent of the total for the state.

Iowa: Iowa's exports to Cuba are forecast to reach $26 million. Table M-18 reports economic impacts for Iowa. The soybean complex, pork, and dry milk account for 80 percent of Iowa's forecast exports to Cuba. Major gains in output occur in these

sectors, ranging from $30 million for the soybean complex, $14.5 for pork, and $4.2 for dry milk. Fats and oils and corn also experience gains in output of $4.8 million and $3.1 million, respectively. Gains in income are estimated to reach a total of $17 million with most of the increase in the soybean complex ($8.4 million), pork ($3.6 million), and dry milk ($1.7 million). GSP for Iowa is estimated to increase by $33.3 million due to increased exports to Cuba, with 85 percent of the expansion accounted for by the soybean complex, pork, and dry milk. Iowa's exports to Cuba are estimated to generate 723 new jobs. Most of the increase will occur in soybeans and soybean meal/oil (353), pork (170), dry milk (64), corn (43), and fats and oils (41).

California: Major exports gains in California are forecast to occur in rice, softwood logs, dry milk production, and dry beans, with total exports of $22.8 million. With rice exports of $9.0 million, California is estimated to receive more than $20 million in economic output for this sector, an additional $6.0 million in household income, an addition of $10.7 million to GSP, and 189 new jobs (Table M-8). Softwood log exports are estimated to reach $4.2 million and generate an additional $9 million in economic output. Household income attributable to softwood logs exports is almost $3.0 million, while additions to GSP reach $5.4 million and 106 new jobs are created. The dry milk sector is forecast to export slightly more than $3.0 million generating $7.3 million in economic output, $2.0 million in income, $3.9 million in GSP, and 65 new jobs. Smaller gains are forecast for dry beans, wheat flour, cotton, fats and oils, and beef. Increases in output range from $2.8 for dry beans to $1.8 for beef. New job creation for these sectors is estimated to range between 26 for both beef and cotton to 42 for dry beans.

Texas: Texas' exports to Cuba are forecast to reach $21.5 million (Table M-46). Major export gains are forecast for fats/oils, rice, beef, chicken meat, softwood logs, and cotton. Together these sectors account for 82 percent of total exports under this scenario. Fat/oils, beef, chicken meat, and rice account for the major gains in economic output with totals from $5.8 million for chicken, $8.2 million for beef, $8.6 million for rice, and $11.6 million for fats/oils. Income gains are largest for fats/oils ($3.2 million), rice ($2.5 million), and beef ($2.3 million). Gains in GSP range from $5.7 million for fats/oils, $4.5 million for rice, $4.1 million for beef, $2.8 million for chicken meat, $2.4 million for softwood logs, and $2.1 million for cotton. Texas' total employment gains are 562 jobs, with the most jobs occurring in the beef sector, followed by fats/oils (100 jobs), rice (79 jobs), chicken meat (68 jobs), and softwood logs (48 jobs).

Nebraska: Nebraska's total exports are forecast to reach $20.0 million under the moderate export growth forecast (Table M-30). Fats/oils, soybeans, beef, and dry beans account for the majority of forecast export expansion. Output attributable to greater exports is estimated to be $45.8 million. The major sectoral gains for output occur in fats/oils ($14.5 million), soybean complex ($11.1 million), beef ($7.9 million), dry beans ($4.2 million), pork ($3.1 million), and wheat ($2.1 million). Income gains are highest for fats/oils ($3.9 million), beef ($2.1 million), soybean meal ($1.9 million), and dry beans ($1.7 million). GSP in Nebraska increases by $25 million, with the major gains in fats/oils, soybeans and soybean meat/oil, beef, dry beans, and corn. Of the 529 new jobs created by exports to Cuba, two-thirds are in the soybean complex, fats/oils, and beef.

Other States: Illinois, Kansas, Minnesota, North Dakota, and Mississippi are the other states in top ten export sales to Cuba. Moderate Export Growth Forecast results for these states are reported in tables M-16, M-19, M-26, M-37, and M-27, respectively. Forecast exports for these states range from $13.9 million for Mississippi to $19.9 million for Kansas. Major sector impacts for output occur for the soybean complex in Illinois and for wheat and wheat flour, fats/oils, and beef in Kansas. These same sectors also experienced similar gains in income, GSP and gains.

Minnesota, North Dakota, and Mississippi had exports forecast between $13.9 and $17.6 million. Minnesota output gains are largest for the soybean complex ($19 million), pork ($4.3 million), wheat and flour ($5.1 million), and dry beans ($3.1 million) (Table M-26). Income gains were similar, ranging from $1.3 million for dry beans to $5.3 million for soybean complex. GSP increases were estimated at a total $22.2 million, with the largest gains in soybean complex ($10.6 million), wheat and flour ($3.5 million), dry beans ($2.4 million), and pork ($2.0 million). Job increases were most prevalent in the soybean complex (225) and wheat and wheat flour (77), accounting for 63 percent of the total.

North Dakota output gains were concentrated in wheat and flour, dry beans, sunflower oil, and the soybean complex (Table M-37). A similar pattern was exhibited for income and GSP, or value added. Wheat and flour and dry beans accounted for the majority of job increases in North Dakota. Mississippi gains in output were estimated at $32 million, with rice being the most important sector at $10.3 million, followed by chicken meat at $9.0 million, softwood logs at $7.2 million, soybean meal at $1.5 million, and cotton at $1.3 million (Table M-27). Major income gains were in rice, chicken meat,

and softwood logs, while the largest gains in GSP were in rice, softwood logs, and chicken meat, respectively. The largest employment gains were for chicken meat, rice, and softwood logs, with increases of 105, 94, and 83 respectively.

Washington, Wisconsin, Virginia, and New York also exhibited some increase in exports to Cuba, along with growth in output and other economic impacts. Washington had the largest increase in exports of any Pacific Northwest state, $11 million (Table M-50). Softwood logs and plywood, wheat, wheat flour, dry milk, potatoes, and beef account for the large majority of the expansion in output for Washington. Softwood logs and plywood are the most important, with output estimates of $11.2 million, followed by wheat and flour ($6.3 million), dry milk ($2 million), potatoes and beef at about $1.0 million each. Major income and value added gains are limited to softwoods, wheat and flour. The softwood sector leads job gains with 130, followed by wheat and flour with 95, and dry milk with 18.

Wisconsin exports to Cuba are forecast to reach $5.4 million, with major gains in fats/oils, the soybean complex, and beef. Output increases are highest for the soybean complex ($3.7 million), fats/oils ($3.3 million), beef ($1.9 million), and cheese ($900,000) (Table M-52). Fats/oils, soybean meal/oil, beef, and cheese lead in income gains, with GSP gains following a similar pattern. Other sectors exhibiting gains in income and value added are soybeans, corn, and potatoes. Employment gains are small, 141 total, with the soybean complex, fats/oils, and beef capturing most of the increase.

Virginia, with forecast exports of $3.8 million, shows most sectoral gains in output for chicken meat, softwood logs, pork, and softwood logs (Table M-49). Income and GSP gains are highest for the same sectors. Virginia has limited employment

expansion of 113 jobs, with 38 in chicken meat, 21 in softwood logs/plywood, and 15 in pork.

New York exports to Cuba increase to $2.0 million under Option 2. Wheat and wheat flour ($1.1 million), dry beans ($271,000), softwood logs ($247,000), cheese ($103,000), and beef account ($69,000) for 88 percent of the total (Table M-35). Output gains are most important for wheat and flour ($2.0 million), softwood logs ($533,000), dry beans ($470,000), cheese ($286,000), and beef ($177,000). Similar patterns exist for gains in income and GSP. While only 55 jobs are created, 30 of those jobs occur in the wheat and flour sectors.

Option 3: High Export Growth Forecast

U.S. agricultural exports are forecast to reach $1.24 billion under the High Export Growth Forecast (Table H-1). Exports from Arkansas are forecast at $167 million, followed by California ($98 million), Iowa ($71 million), Louisiana ($66 million), and Texas ($54 million). Rice, the soybean complex, chicken meat, wheat and wheat flour, softwood logs, corn, beef, pork and fertilizers represent the major products exported to Cuba under this option. Export values range from $300 million for rice, $179 million for the soybean complex, $100 million for each of chicken meat and wheat, $85 million for softwood logs, $80 million for corn, $54 million for fertilizers, and $50 million for each of beef and pork (Table H-3). Other forecast exports are dry milk ($47 million), dry beans ($45 million), flour ($40 million), farm machinery ($35 million), pesticides ($21 million), cotton and plywood ($12 million each), cheese ($8 million), and potatoes and seafood ($6 million each).

Economic output attributed to increases in agricultural exports to Cuba is estimated to be about $2.8 billion (Table H-1). The top ten states account for 56 percent of this output, ranging from $390 million for Arkansas to $91 million for Nebraska. Rice, chicken meat, soybean meal and oil, softwood logs, and wheat and wheat flour represent the major sectors to experience gains in output due to U.S. exports to Cuba, with values ranging from $184 million for softwood logs to $689 million for rice (H-3). Other gains in output are estimated for the soybean complex ($403 million), chicken meat ($292 million), wheat and wheat flour ($255 million), softwood logs ($183 million), corn ($149 million), pork ($143 million), beef ($136 million), dry milk ($112 million), dry beans ($78 million), fertilizers ($115 million), and farm machinery ($65 million).

Additional household income attributable to exports reaches $818 million for the United States (H-1). The following states have the largest gains: Arkansas ($113 million), California ($65 million), Iowa ($46 million), Louisiana ($42 million), and Texas ($37 million). Other states for which significant levels of income growth were estimated include Illinois, Mississippi, Minnesota, Nebraska, and all between $26-33 million per year. Moderate gains in income occur in Kansas ($23 million), Florida ($18 million), Indiana ($18 million), and Washington ($19 million), while lower income gains occur in South Carolina ($6 million), Tennessee ($6 million), Maryland ($4.8 million), and New York ($3.7 million). Rice, the soybean complex, wheat and wheat flour, chicken meat and softwood logs sectors receive most of the benefits of household income gains associated with higher exports to Cuba, with increases from $60 million for softwood logs to $199 million for rice (Table H-3). Other income gains occur in corn, beef, pork, dry milk, dry beans, farm machinery, and phosphate fertilizer.

Total value added, or GDP, attributed to increased exports under Option 3 is estimated to be $1.6 billion (Table H-1). Arkansas, California, Iowa, Louisiana, and Texas account for 36 percent of the gains in GSP, with increases ranging from $68 million for Texas to $204 million for Arkansas. Value added by sector is the largest for rice at $360 million, followed by $226 million for the soybean complex, $171 million for wheat and flour, $139 million for chicken meat, and $109 million for softwood logs (Table H-3). Other value added gains are in beef, pork, dry milk, dry beans, farm machinery, and fertilizer.

Total employment in the United States attributed to the $1.24 billion increase in exports to Cuba is estimated to be 31,262 jobs (Table H-1). Arkansas, California, Iowa, Louisiana, Texas, and Illinois experience major increases in job numbers, which range from 1,435 in Illinois to 3,797 in Arkansas. Other states with job increases exceeding 1,000 are Mississippi, Minnesota, Nebraska, Missouri, Kansas, and North Dakota.

Employment growth was the highest for rice (6,341), wheat and wheat flour (3,699), chicken meat (3,440), soybean meal and oil (2,703), softwood logs (2,119), corn (2,059), beef (1,896), pork (1,672), dry beans (1,172), dry milk (1,006), and fertilizer (891) (Table H-3). Other sectors gaining jobs were in farm machinery, pesticides, cheese, cotton, plywood, sunflower oil, potatoes, and seafood.

Table H-1: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by State in Descending Order of Export Value

State	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Arkansas	$167,263	$390,312	$113,041	$204,100	3,797
California	$98,119	$222,525	$65,305	$121,346	2,219
Iowa	$70,764	$160,051	$45,961	$89,157	1,946
Louisiana	$65,634	$144,603	$42,434	$78,668	1,369
Texas	$53,857	$125,520	$36,981	$67,952	1,443
Illinois	$52,939	$115,815	$32,998	$66,216	1,435
Mississippi	$50,932	$119,407	$35,322	$63,584	1,242
Minnesota	$45,880	$98,872	$29,031	$57,912	1,259
Nebraska	$40,843	$90,767	$26,671	$51,809	1,164
Missouri	$39,826	$90,340	$25,940	$49,589	1,024
Kansas	$38,770	$82,087	$23,300	$48,125	1,098
North Dakota	$37,771	$72,408	$23,805	$47,660	1,010
North Carolina	$31,097	$76,662	$22,156	$40,284	902
Washington	$29,326	$61,545	$18,894	$36,871	737
Indiana	$29,139	$63,933	$18,176	$36,459	791
Georgia	$28,743	$73,210	$21,998	$38,252	863
Florida	$28,554	$61,391	$17,829	$33,516	546
South Dakota	$25,998	$56,937	$16,449	$32,493	713
Ohio	$25,085	$53,455	$15,335	$31,276	672
Alabama	$22,382	$57,431	$17,268	$29,772	670
Idaho	$19,230	$38,535	$12,279	$23,926	478
Oklahoma	$18,054	$40,179	$11,498	$22,501	505
Michigan	$17,730	$34,806	$11,561	$22,717	476
Oregon	$16,824	$35,218	$11,253	$21,241	425
Wisconsin	$13,436	$31,047	$8,896	$17,126	371
Colorado	$13,390	$27,816	$8,709	$17,106	390
Pennsylvania	$12,391	$29,348	$8,245	$15,986	344
Kentucky	$11,564	$26,412	$7,650	$14,758	336
Virginia	$11,430	$26,992	$7,955	$14,759	324
Montana	$10,481	$20,275	$6,270	$13,021	290
Tennessee	$9,051	$20,468	$5,954	$11,522	252
South Carolina	$8,143	$19,127	$5,890	$10,616	229
Maryland	$6,515	$16,542	$4,819	$8,628	202
New York	$6,133	$12,214	$3,712	$7,895	166
Deleware	$4,484	$12,270	$3,559	$6,077	146
Wyoming	$3,503	$6,995	$2,315	$4,364	85
Maine	$3,161	$6,317	$2,146	$4,047	78
New Mexico	$2,623	$6,014	$1,764	$3,363	68
Utah	$2,435	$5,318	$1,498	$3,133	73
Arizona	$2,321	$4,971	$1,509	$2,985	69
New Jersey	$1,156	$2,081	$657	$1,461	30
West Virginia	$1,114	$3,091	$904	$1,523	38
Massachusetts	$891	$1,445	$496	$1,138	22
Alaska	$561	$1,209	$393	$717	14
New Hampshire	$533	$1,121	$369	$682	13
Vermont	$495	$1,079	$350	$637	13
Rhode Island	$221	$258	$117	$280	5
Nevada	$199	$418	$134	$260	7
Connecticut	$98	$177	$63	$125	2
Hawaii	$40	$108	$30	$53	2
Unallocated	$59,049	$124,866	$37,921	$74,018	913
TOTAL	**$1,240,180**	**$2,773,991**	**$817,811**	**$1,551,704**	**31,262**

Table H-2: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by State in Alphabetical Order

State	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)	($1,000)			(Jobs)
Alabama	$22,382	$57,431	$17,268	$29,772	670
Alaska	$561	$1,209	$393	$717	14
Arizona	$2,321	$4,971	$1,509	$2,985	69
Arkansas	$167,263	$390,312	$113,041	$204,100	3,797
California	$98,119	$222,525	$65,305	$121,346	2,219
Colorado	$13,390	$27,816	$8,709	$17,106	390
Connecticut	$98	$177	$63	$125	2
Deleware	$4,484	$12,270	$3,559	$6,077	146
Florida	$28,554	$61,391	$17,829	$33,516	546
Georgia	$28,743	$73,210	$21,998	$38,252	863
Hawaii	$40	$108	$30	$53	2
Idaho	$19,230	$38,535	$12,279	$23,926	478
Illinois	$52,939	$115,815	$32,998	$66,216	1,435
Indiana	$29,139	$63,933	$18,176	$36,459	791
Iowa	$70,764	$160,051	$45,961	$89,157	1,946
Kansas	$38,770	$82,087	$23,300	$48,125	1,098
Kentucky	$11,564	$26,412	$7,650	$14,758	336
Louisiana	$65,634	$144,603	$42,434	$78,668	1,369
Maine	$3,161	$6,317	$2,146	$4,047	78
Maryland	$6,515	$16,542	$4,819	$8,628	202
Massachusetts	$891	$1,445	$496	$1,138	22
Michigan	$17,730	$34,806	$11,561	$22,717	476
Minnesota	$45,880	$98,872	$29,031	$57,912	1,259
Mississippi	$50,932	$119,407	$35,322	$63,584	1,242
Missouri	$39,826	$90,340	$25,940	$49,589	1,024
Montana	$10,481	$20,275	$6,270	$13,021	290
Nebraska	$40,843	$90,767	$26,671	$51,809	1,164
Nevada	$199	$418	$134	$260	7
New Hampshire	$533	$1,121	$369	$682	13
New Jersey	$1,156	$2,081	$657	$1,461	30
New Mexico	$2,623	$6,014	$1,764	$3,363	68
New York	$6,133	$12,214	$3,712	$7,895	166
North Carolina	$31,097	$76,662	$22,156	$40,284	902
North Dakota	$37,771	$72,408	$23,805	$47,660	1,010
Ohio	$25,085	$53,455	$15,335	$31,276	672
Oklahoma	$18,054	$40,179	$11,498	$22,501	505
Oregon	$16,824	$35,218	$11,253	$21,241	425
Pennsylvania	$12,391	$29,348	$8,245	$15,986	344
Rhode Island	$221	$258	$117	$280	5
South Carolina	$8,143	$19,127	$5,890	$10,616	229
South Dakota	$25,998	$56,937	$16,449	$32,493	713
Tennessee	$9,051	$20,468	$5,954	$11,522	252
Texas	$53,857	$125,520	$36,981	$67,952	1,443
Utah	$2,435	$5,318	$1,498	$3,133	73
Vermont	$495	$1,079	$350	$637	13
Virginia	$11,430	$26,992	$7,955	$14,759	324
Washington	$29,326	$61,545	$18,894	$36,871	737
West Virginia	$1,114	$3,091	$904	$1,523	38
Wisconsin	$13,436	$31,047	$8,896	$17,126	371
Wyoming	$3,503	$6,995	$2,315	$4,364	85
Unallocated	$59,049	$124,866	$37,921	$74,018	913
TOTAL	**$1,240,180**	**$2,773,991**	**$817,811**	**$1,551,704**	**31,262**

Table H-3: Estimated Economic Impacts of Agricultural, Fisheries, Forest and Requisite Products Exports to Cuba Arranged by Sector

Sector	Exports	Estimated Economic Impacts			
		Output	Income	Value Added	Employment
	($1,000)		($1,000)		(Jobs)
Beef	$50,000	$135,601	$37,472	$66,782	1,896
Pork	$50,000	$142,509	$35,604	$64,604	1,672
Chicken Meat	$100,000	$292,425	$84,833	$138,871	3,440
Dry Milk	$47,000	$112,282	$31,343	$59,720	1,006
Cheese	$8,000	$22,192	$6,038	$10,633	207
Wheat	$100,000	$182,672	$52,953	$119,917	2,739
Wheat Flour	$40,000	$73,069	$21,181	$51,491	960
Rice	$300,000	$688,749	$198,524	$359,794	6,341
Corn	$80,000	$148,809	$45,969	$97,489	2,059
Soybeans	$70,000	$123,722	$42,526	$88,517	2,025
Soybean Products	$109,000	$280,323	$71,899	$136,619	2,703
Sunflower Oil	$10,880	$26,345	$7,804	$13,711	276
Dry Beans	$44,800	$77,687	$31,920	$59,526	1,172
Potatoes	$6,000	$10,405	$4,275	$7,972	157
Cotton	$12,000	$22,182	$8,164	$15,576	299
Seafood	$6,000	$6,900	$3,147	$7,572	123
Softwood Sawn Logs	$85,000	$183,360	$59,600	$108,676	2,119
Softwood Plywood	$12,000	$25,886	$8,414	$15,343	299
Phosphate Fertilizer	$34,000	$72,114	$20,400	$38,556	561
Nitrogen Fertilizer	$20,000	$42,420	$12,000	$22,680	330
Pesticides	$21,000	$39,480	$12,768	$25,599	333
Farm Machinery	$34,500	$64,860	$20,976	$42,056	547
TOTAL	**$1,240,180**	**$2,773,991**	**$817,811**	**$1,551,704**	**31,262**

State Impacts by Sector

Results for the High Export Growth Forecast for each state by sector are presented in tables H-4 through H-53. Under the High Export Growth Forecast, it was estimated that U.S. agricultural exports would reach $1.2 billion, led by Arkansas, California, Iowa, Louisiana, and Texas. Results for these and selected other Northeastern states are described here, while all sector and state results are reported in Appendix A.

Arkansas: Exports from Arkansas reach $167 million under Option 3. Rice exports of $137 million account for 82 percent of the total, followed by chicken meat ($14.4 million), the soybean complex ($5.3 million), and softwood logs ($3.7 million). Wheat and cotton account for $2.7 million and $1.0 million, respectively (Table H-7). Rice has the largest impact on output at $316 million, creating an additional $91 million in income, $165 million in GSP, and 2, 906 jobs. The other major gains in output are for chicken, $42 million, with $12 million in income, $20 million in GSP, and 494 jobs.

California: California, with a diverse agricultural base, has broader based impacts (H-8). Total exports are forecast to reach $98 million under Option 3, with the increases expected in rice, dry milk, softwood logs, dry beans, wheat and wheat flour, beef, cotton, and cheese. Output is estimated to be $223 million, with rice, dry milk, and softwood logs accounting for 86 percent of the total. Large income and GSP gains are estimated for rice, $36 million and $64 million, respectively. Additional employment created in the California rice sector is estimated at 1,135 jobs. The dry milk sector gains $26 million in GSP and $14 million in income, along with 449 jobs.

Iowa: Exports from Iowa are forecast to be $70.8 million under Option 3. The soybean complex, sunflower oil, pork, corn, and dry milk are the most important exports

(Table H-18). Gains in output are concentrated in the soybean complex ($67 million), with about $47 million in soybean meat and oil. Pork has output gains of $42 million, followed by corn at $26 million, and dry milk at $9.5 million. Major income gains due to expanded exports are $19 million for the soybean complex, $10.4 million for pork, $8.0 million for corn, and $3.9 million for dry milk. Soybean complex, pork, corn, and dry milk also capture most of the increase in GSP, 94 percent of $89.2 million. Iowa also experiences employment gains of 1,946 new jobs. Again, the soybean complex, pork sector, corn, and dry milk dominate job creation due to expanded exports to Cuba.

Louisiana: Rice exports account for about 82 percent of the forecast total Louisiana exports of $66 million to Cuba (H-21). Other important sectors are fertilizer, seafood and softwood logs and plywood. Minor exports gains occur for soybeans and soybean products, cotton, corn, and beef. Rice also dominates estimated output increases attributed to expanded exports ($103 million), accounting for 85 percent of the total. Nitrogen fertilizer output gains are estimated at $14 million, while exports are forecast to reach $6.6 million. Phosphate fertilizer output gains are estimated at $9.3 million on forecast exports of $4.4 million. Income gains for Louisiana rice are estimated at $30 million, compared to GSP gains of $54 million. Of the total 1,369 jobs created, 951 occur in the rice sector. Smaller employment gains occur in nitrogen fertilizer (109), phosphate fertilizer (72), softwood logs (63), seafood (51), and softwood plywood (32).

Texas: Rice, beef, chicken meat, softwood logs, wheat and wheat flour, cotton, and plywood are the major forecast gains in exports for Texas, reflecting more diversity than most of the other top five states (H-46). Gains in output are highest for rice ($51 million), beef ($23.5 million), chicken meat ($17.1 million), nitrogen fertilizer ($9.3

million), wheat and flour ($8.8 million), softwood logs ($8.2 million), cotton ($5.1 million), and plywood ($5.0 million). Rice, beef, and chicken meat represent 71 percent of the total increase in income due to new exports to Cuba. Other income gains occur for softwood logs, wheat and flour, nitrogen fertilizer cotton, and plywood. Texas' GSP increases are greatest for rice ($27 million), beef ($11.6 million), chicken meat ($8.1 million), wheat and flour ($5.9 million), nitrogen fertilizer ($5 million), softwood logs ($4.9 million), cotton ($3.6 million), and plywood ($2.9 million). A total of 1,443 new jobs are created as a result of expanded exports to Cuba. About 70 percent of the additional jobs due to increased exports are in the rice, beef, and chicken meat sectors.

Other States: Illinois, Mississippi, Minnesota, Nebraska, and Missouri represent the other states in top ten in export sales to Cuba. Results for the High Export Growth Forecast for these other top ten states range from $40 million for Missouri to $53 million for Illinois. Illinois, Minnesota, Missouri, and Nebraska are similar in that major gains in output occur in the soybean complex, corn, wheat and flour, pork, and beef (Tables H-16, H-26, H-28, H-30, respectively). Major sectoral impacts for output occur for the soybean complex in Illinois and Minnesota, $67 and $43 million, respectively. These same sectors also experienced similar gains in income, GSP, and employment. Illinois and Minnesota also have relatively large output gains in pork, corn, and wheat/flour. Gains in income and value added follow similar patterns, with Minnesota having additional gains in dry beans, cheese, chicken meat, sunflower oil, softwood logs, and potatoes. Employment gains for these two states are relatively large, with job increases of 1,435 for Illinois and 1,259 for Minnesota.

Total agricultural exports for Mississippi are forecast to reach $50.9 million under option 3. Rice, chicken meat, softwood logs, the soybean complex, and cotton account for 94 percent of total forecast value of Mississippi's agricultural exports to Cuba (H-27). Mississippi is unique among these five states in that most output gains occur in rice ($61.5 million), chicken meat ($26.3 million), and softwood logs ($14.4 million), accounting for 89 percent of the estimated total state increase in output. Other important sectors are the soybean complex, cotton, and wheat/flour. Rice, chicken meat, and softwood logs account for 88 percent of the increase in household income due to greater exports to Cuba. Value added, or GSP, experiences the largest gains in rice ($32 million), chicken meat ($12.5 million), softwood logs ($8.5 million), soybean meal/oil ($1.7 million), and cotton ($1.6 million). Mississippi gains 1,242 jobs that are attributable to increased exports, with major employment gains in rice (567), chicken meat (310), and softwood logs (167).

Nebraska's total exports are forecast to reach $40.8 million under the High Export Growth Forecast (Table H-30). Output attributable to greater exports is estimated to be $90.8 million, with the major sectoral gains in the soybean complex ($25.3 million), beef ($22.5 million), corn ($15.1 million), dry beans ($9.5 million), pork ($9 million), and wheat ($4.9 million). Income gains are highest for beef ($6 million), soybean meal/oil ($4.5 million), and dry beans ($3.9 million). GSP in Nebraska increases by $51.8 million, with the major gains in soybeans and soybean meal/oil, beef, dry beans, corn, wheat/flour, and pork. Of the 1,164 new jobs created by exports to Cuba, 91 percent are in five major sectors: the soybean complex, beef, corn, dry beans, and pork.

Missouri's agricultural exports to Cuba are forecast to reach $39.8 million under Option 3. Rice, soybeans, soybean meal/oil, wheat/flour, corn, chicken meat, and pork are the major products exported (Table H-28). Major gains in output occur in rice ($33.5 million), the soybean complex ($25.5 million), wheat/flour ($8.2 million), chicken meat ($8.1 million), and pork and corn ($5.9 million each). Exports to Cuba also generate gains in income and value added, or GSP. Total household income increases by $25.9 million, while GSP rises $49.6 million due to expanded exports. Almost all of the gains in both income and GSP are concentrated grain, soybeans, chicken meat and pork. Missouri adds 1,024 new jobs due to greater exports, with the largest increases in rice (308), the soybean complex (299), wheat and wheat flour (123), chicken meat (95), corn (82), and pork (70).

Washington, Wisconsin, Virginia, and New York also exhibited some increase in exports to Cuba, along with growth in output, value added and employment. Washington had the largest increase in exports of any Pacific Northwest state, $29.3 million (Table H-50). Softwood logs and plywood, wheat, wheat flour, dry milk, potatoes, dry beans, and beef account for the large majority of output expansion for Washington. Softwood logs and plywood are the most important, with output estimates of $22.5 million, followed by wheat and flour ($15 million), dry milk ($13.9 million), beef ($2.9 million), potatoes ($2.2 million), and dry beans ($1.9 million). Major income and value added gains are concentrated in softwoods, wheat and flour, and dry milk. Total employment gains for Washington reach 737 jobs. The softwood log/plywood sectors lead job gains with 261, followed by wheat and flour with 226, and dry milk with 124.

Wisconsin's exports to Cuba are forecast to reach $13.4 million under Option 3, with major gains in the soybean complex, corn, cheese, and beef. Output increases are highest for the soybean complex ($8.4. million), cheese ($6 million) beef ($5.5 million), and corn ($5.4 million) (Table H-52). Corn, cheese, soybean meal/oil, beef and soybeans lead in income gains, while GSP gains, or value added, follow a similar pattern. Other sectors exhibiting gains in income and value added are wheat and wheat flour, pork, softwood logs, potatoes, and dry beans. Although employment gains are small, 371 total, the soybean complex and beef capture 45 percent of the increase in jobs attributable to exports to Cuba.

Virginia has forecast exports of $11.4 million under the High Export Growth Forecast (H-49). Chicken meat, softwood logs, pork, seafood, and soybean meal/oil are among the largest forecast exports to Cuba. Gains in output are largest for chicken meat ($9.4 million), pork ($3.9 million), softwood logs ($3.3 million), soybeans and soybean products ($2.8 million), wheat and flour ($2.1 million), and seafood ($933,000). Gains in household income and GSP follow a similar pattern, with total of $8.0 million and $14.8 million, respectively. Employment expansion in Virginia reaches 324 jobs, with 111 in chicken meat, 44 in pork, 42 in softwood logs/plywood, and 33 in the soybean complex. Beef, wheat flour, and seafood experience job gains of less than 20 per sector.

New York exports to Cuba are forecast to reach $6.1 million under Option 3, the High Export Growth Forecast (H-35). Wheat and wheat flour, dry beans, softwood logs, cheese, and beef account for 88 percent of total New York exports to Cuba. With output gains of $12.2 million, the most important are for wheat and flour ($6 million), cheese ($1.9 million), softwood logs ($1.1 million), dry beans ($1.1 million), and beef ($507

thousand). Similar patterns exist for gains income and GSP, with totals reaching $3.7 million and $8 million, respectively. Total employment attributable to increased New York exports to Cuba is 166 jobs, 89 in wheat/flour, 18 in cheese, 16 in dry beans, and 12 in softwood logs.

Summary and Conclusions

Cuba currently represents an $800 million market for food, other agricultural products, and agricultural requisites. If the United States pursues expanded trade, investment, and tourism with Cuba, it is reasonable to expect that U.S. agricultural exports to Cuba could approach $500 million to $1.2 billion annually. While this is a relatively small share of annual total U.S. agricultural exports of $55 billion, it would have a substantial economic impact on the states that produce, handle, ship, process, and market products destined for Cuba.

An input-output analysis was completed to assess the impacts of expanded U.S. agricultural exports to Cuba on the U.S. economy. Input-output multipliers from IMPLAN were used to estimate the effects of increased U.S. agricultural exports on economic activity, value added, and employment. IMPLAN is a computer algorithm of a system of equations representing 528 sectors of the U.S. economy and specifying interrelationships among sectors. IMPLAN captures intermediate sales among sectors and households, as well as the value added to the economy from any specified activity, in this case U.S. agricultural exports to Cuba.

Under the Moderate Export Growth Forecast, U.S. agricultural exports to Cuba reach $411 million. These exports stimulate another $919 million in economic output, or business sales throughout the U.S. economy. Additional household income resulting

from exports to Cuba would reach $273 million. This, combined with economic output, would generate a total impact of $1.2 billion. The additional Gross Domestic Product associated with these exports would approach $517 million and create an additional 10, 656 jobs. The states to share the major benefits of this increased economic activity would be Arkansas, Iowa, California, Texas, Nebraska, Kansas, Illinois, Minnesota, North Dakota, and Mississippi. The benefits are quite widespread, however, with the top 27 states experiencing output gains exceeding $10 million each.

Under the High Export Growth Forecast U.S. agricultural exports to Cuba reach $1.24 billion. Louisiana and Missouri replace Kansas and North Dakota as top ten export states, with the other states remaining the same. Arkansas leads all states in exports to Cuba with a total forecast value of $167 million, followed by California at $98 million, Iowa at $71 million, Louisiana at $67 million, and Texas at $54 million. Major commodity exports to Cuba are rice valued at $300 million, soybeans and products ($179 million), wheat and flour ($140 million), agricultural requisites ($109 million), chicken meat ($100 million), softwood logs and plywood ($97 million), corn ($80 million), dry milk ($47 million), dry beans ($45 million), and cotton ($12 million).

Exports to Cuba are estimated stimulate an additional $3.6 billion in total economic output, with $2.8 billion in direct and indirect impacts and another $818 million in household income. Total GDP attributable to increased agricultural exports to Cuba is estimated to be $1.6 billion. The top 24 exporting states are each estimated to have additional Gross State Product (GSP) exceeding $20 million. Total employment gains will approach 31,262 jobs, with the top 12 export states experiencing a minimum of 1,000 jobs each.

The Low Export Growth Forecast of $37.5 million results in output of $84 million, $25 million in additional household income, $47 million in GDP, and nearly 1,000 new jobs. While these impacts are substantially below those of the previous two scenarios, they do represent the best estimate of the status quo in U.S.-Cuban agricultural trade. Without additional trade and investment liberalization, these results will likely emerge over the near term.

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Appendix A

Tables M-4 through M-77 for Option 2

Moderate Export Growth Forecast

Appendix A

Appendix A contains Tables M-4 through M-77. Tables M-4 through M-53 are the estimated economic impacts of agricultural, fisheries, forest products, and agricultural requisites exports to Cuba for each state by sector, and are numbered in alphabetical order. Tables M-54 through M-76 are the estimated economic impacts of exports to Cuba for each sector in descending order of export value by state. Table M-77 displays estimated economic impacts of U.S. pesticide and farm machinery exports to Cuba.

Fertilizers are listed in Tables M-4 through M-53 as one item for summary. Table M-75 gives specific results for phosphate fertilizers and Table M-76 for nitrogen fertilizers. These two estimates were added to obtain the summary results in Tables M-4 through M-53.

Beef and pork are listed in Tables M-4 through M-53 as one category each. Tables M-54 and M-55 are both estimates for the beef sector. Impacts of beef exports on cattle producers are in Table M-54, while impacts of beef exports on packing plants are in Table M-55. Table M-56 is impacts of pork exports on hog producers, while Table M-57 is impacts of pork exports on hog processors.

This approach was used in the sectoral tables so as to allocate estimated economic impacts between the farm sector and the processing sector to avoid under representation of state export impacts in the national totals. For example, Table M-55 lists Oklahoma as the twenty-fifth largest processor (by slaughter) of beef. If only the processor share of beef production were used to allocate state shares of beef export benefits, Oklahoma would be substantially under represented. The same was used for hog live production and pork processing. To obtain the data for beef in M-4 through M-53, the estimates from Tables M-54 and M-55 are summed across sectors. To obtain the data for pork, estimates in M-54 and M-55 are summed for Tables M-56 and M-57.

Appendix B

Tables H-4 through H-76 for Option 3

High Export Growth Forecast

Appendix B

Appendix A contains Tables H-4 through H-75. Tables H-4 through H-53 are the estimated economic impacts of agricultural, fisheries, forest products, and agricultural requisites exports to Cuba for each state by sector, and are numbered in alphabetical order. Tables H-54 through H-76 are the estimated economic impacts of exports to Cuba for each sector in descending order of export value by state. Table H-76 displays estimated economic impacts of U.S. pesticide and farm machinery exports to Cuba.

Fertilizers are listed in Tables H-4 through H-53 as one item for summary. Table H-74 gives specific results for phosphate fertilizers and Table H-75 for nitrogen fertilizers. These two estimates were added to obtain the summary results in Tables H-4 through H-53.

Beef and pork are listed in Tables H-4 through H-53 as one category each. Tables H-54 and H-55 are both estimates for the beef sector. Impacts of beef exports on cattle producers are in Table H-54, while impacts of beef exports on packing plants are in Table H-55. Table H-56 is impacts of pork exports on hog producers, while Table H-57 is impacts of pork exports on hog processors.

This approach was used in the sectoral tables so as to allocate estimated economic impacts between the farm sector and the processing sector to avoid under representation of state export impacts in the national totals. For example, Table H-55 lists Oklahoma as the twenty-fifth largest processor (by slaughter) of beef. If only the processor share of beef production were used to allocate state shares of beef export benefits, Oklahoma would be substantially under represented. The same was used for hog live production and pork processing. To obtain the data for beef in H-4 through H-53, the estimates from Tables H-54 and H-55 are summed across sectors. To obtain the data for pork, estimates in H-54 and H-55 are summed for Tables H-56 and H-57.