MEASURING THE RELATIONSHIP BETWEEN NEW AIR CARGO SERVICE AND REGIONAL ECONOMIC IMPACTS (11-15-17)

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ABSTRACT

This paper investigates the potential of an airport gaining market shares of international exports and imports, and resulting regional economic impacts if new cargo service can be established. The methodology employs a generalized cost-elasticity model built from measures of the relative costs of transporting imports and exports relative to existing air cargo patterns to derive a likely map of counties with shippers who could divert their cargo to use the new service through a specified airport instead of other international gateway airports. The methodology employed was selected to best identify the exporters and importers who stand to gain from transportation cost savings under the new service scenario. In an efficient market, it is expected that the most cost-effective approaches to production and distribution are employed. The choices evident in a market representing import and export activity include the foreign trade partner market, the combination of available transportation modes that are selected using relative costs and the capabilities of the firms employing them. Cost elasticities were then combined with the use of an input/output model to. estimate potential regional economic impacts. To illustrate this approach, a case study was developed to illustrate the potential of new international cargo service at Pittsburgh International Airport.

Keywords: Cargo, Exports, Imports, Surface Transportation, Productivity, Economic Impact

INTRODUCTION

With the growth in E-Commerce and globalization of production, air cargo is assuming increasing importance in the contributions to regional and state economies of many international airports and airport systems. (*1*,*2*) Measurements of contributions are shown in terms of logistics industries, such as trucking and warehousing services that are required to support air cargo, as well as the value of goods produced regionally and shipped by air. (*3*,*4*) The latter is justified as industrial production that is required to be near an airport to enable fast long-distance delivery, and if not for the cargo services provided by a local airport, producers would need to at least partly relocate be near an airport with adequate cargo services.

A follow-up question asked by airport managers and sponsors is how additional cargo service will impact regional economies. The first analytical question that follows is whether there is demand for such service. If yes, additional questions include if logistics industries are affected and if there is reason to believe that regional productivity increase due to the proposed additional air cargo services.

Research Approach

We propose an approach that assumes companies will seek to reduce surface transportation costs by using airports closer to their plants if questions of access to markets and reliability are satisfied. In this approach, airports that add new routes will capture market shares from other airports if adding routes will enable companies to reduce time and out-of-pocket costs associated with moving products to and from airports being used before the new service is offered.

Methodology

This analysis employs a generalized cost-elasticity model. The model is built from measures of the relative costs of transporting imports and exports relative to existing air cargo patterns. This enables the ability to estimate a likely set of counties from which businesses might divert their freight shipments to use the proposed new service instead of other international gateway airports. The methodology employed was selected to best identify the export shippers and importers that stand to reduce surface transportation costs from the proposed service. In an efficient market, it is expected that businesses will rationally employ the most cost-effective approaches to production and distribution that are available.

DATA SOURCES

The following is a high-level summary of some of the data sources which were used in building the airport cargo diversion tool.

Freight Data

VFreight™ is a freight tool that uses county level economic models to spatially down-allocate broader freight flows to the industries that are involved in their production and consumption. Coverage includes 2-digit Standard Classification of Transported Goods (SCTG) Commodity Classification for 7 different transport modes with a county level of detail for domestic, and port level of detail for international, freight flows tracking to international markets. (*5*)

County Impedances

The Oak Ridge County-to-County impedances are a publicly available data source published by the U.S. Oak Ridge National Laboratories that provide estimates of the

network distance by truck, rail, intermodal modes plus direct "as the crow-flies" distances (used for air). This modal distance database was used to estimate county-to-county distances for estimating ton-mileage in the diversion model. (*6*)

Cost Assumptions

The model included an operating cost per ton mile for each relevant mode of transportation. For this analysis, the operating cost per ton-mile by mode assumptions employed were adapted from the U.S. Bureau of Transportation Statistics (updated using a U.S. Bureau of Labor Statistics consumer price index (CPI) cost escalation adjustment factor) to estimate ton-mile costs. It is important to note that these cost factors are "commodity neutral," meaning they are independent of the commodity classification of the cargo being shipped and therefore represent an average cost (revenue) per ton-mile. (*7*)

SEQUENCE OF ANALYSIS

This analysis examines potential adjustments of air cargo shippers to switch the international airport used for import or export to take advantage of transportation cost savings from introduction of new air service. Shippers are examined based on county location and commodity traded.

As Figure 1 shows, the combination of cost reductions in the effective total (domestic truck to/from the airport plus international air) costs is used in the model to determine an unbiased estimation of diversion.

This result is more complex than applying a fixed ratio to spatial radii (distance bands) around an airport. Instead, this approach considers the relative costs of the separate modal transportation legs, a composite estimate of the magnitude of the cost savings, which independently tracks which Origin – Domestic Mode – Commodity – Airport combinations have potential to see cost savings. The base year data for 2014 was used to be consistent with both WISERTrade and U.S. Census Bureau Foreign Trade statistics for the air cargo imports and exports. (*8*,*9*)

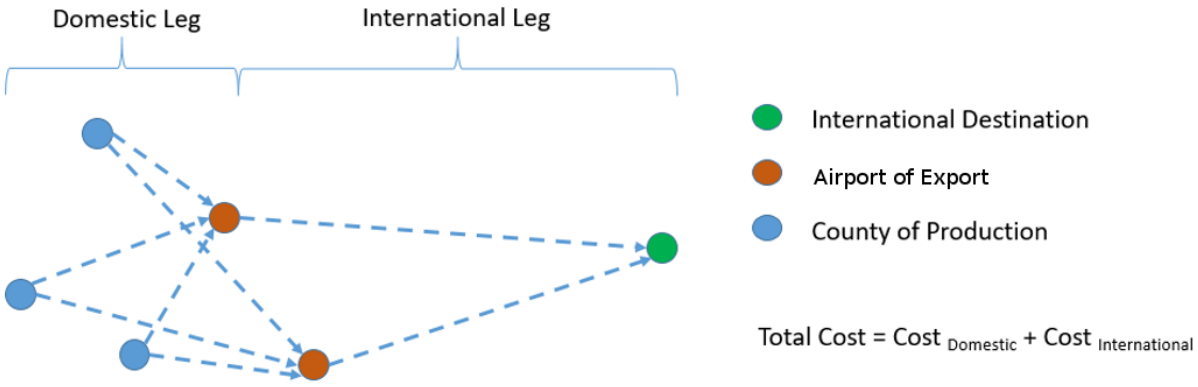


FIGURE 1. Process for Determining Cost Savings from Potential Airport Cargo Diversion

CASE STUDY APPLICATION

As a case study of this approach, we examine international air cargo shipped from and to Southwest Pennsylvania based on establishing international air cargo freighter service connecting Pittsburgh International Airport (PIT) with Europe (through Luxembourg) and the Middle East (through Qatar). For this analysis, Southwest Pennsylvania is a ten-county region of Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Lawrence, Washington and Westmoreland counties. The City of Pittsburgh is in Allegheny County, which is the economic center of the region and home to PIT.

The proposed new service is projected to fly twice-weekly round trips using Boeing 777-200F aircraft with a 100-ton capacity. Each round trip is envisioned as Pittsburgh -Luxembourg-Qatar-Luxembourg-Pittsburgh. This scenario integrates the foreign region markets, commodities traded by air between the U.S. and those markets and the U.S. gateway airports used to send and receive cargo to/from the markets.

The driver for PIT gaining air cargo traffic is that the new service will result in a net cost savings for businesses that are located closer to PIT than to the airports that they currently use to ship and receive goods from Europe and the Middle East. The new service at PIT will induce such businesses to divert export and import shipments from other U.S. international gateway airports, thus saving time and out-of-pocket costs.

Businesses that may benefit from this new service have been identified using county-level location data for originating and terminating freight flows. (*5*) This analysis demonstrates that there are international shippers in the U.S. who would benefit from utilizing PIT under this framework.

Representation of Diversion Potential

The first step is an assessment of the types of commodities nationally that are traded with the Europe and Middle East markets that either originated or were destined to the U.S. using airborne shipments.

Second, we identified the counties where the commodities identified in the prior step are produced and consumed, and which are exported or imported by air in trade with Europe and the Middle East. This provides the spatial pattern of these goods for transport within the U.S. to and from the international gateway airports, and similarly allows the overlay of the airport-layer representing the top airports used as gateways for the trade with Europe and the Middle East. Combining the results of these two steps provides a complete picture of potential air freight and drives the model that estimates the new PIT freight potential.

It is not plausible for new service at PIT to divert European and Middle Eastern air freight destined across the entire U.S. Therefore, the freight market was initially constrained to focus on shipments to/from any international gateway airport within a 300-mile radius of PIT (as the crow flies) as a way of representing potentially vulnerable airports that fall within a similar service area of approximately five driving hours from PIT.

A cost elasticity model was developed and applied, first to identify existing air cargo commodity flows between airports and counties of production/consumption, and second to estimate scenarios of diversions to PIT. The air freight flows that were identified as potential for diversion were based on the potential per mile transportation cost savings when shipments were switched to PIT from the current international gateway airport used.

This model expresses the international tonnage to be diverted from surrounding airports to go through PIT as the summation of all import/export shipments from/to a country by commodity through comparable airports. These airports are restricted to being located within a

drive time of five hours from PIT. Diversion occurs where total computed value of time in transit is estimated as less than their current total cost estimate, such that the businesses doing the importing/exporting remain within the radii of a same-day shipping delivery market window of 240 miles (~3-4 hours) to carry their diverted goods from/to the airport.

Originally the attraction potential for diversion was handled as a gravity model, whose decay parameter was set to be the inverse distance between county and airport. In so doing, we learned that the modeled results yielded a distribution of potential counties that included long-distance trucking to and from major coastal gateway airports (e.g. export shipments leaving Ohio to be exported via JFK in New York to Europe). Some of these air trade flows may have attributes in terms of service requirements, or air carrier preference, that result in air freight volume that may be less likely to divert than purely shipment cost-based airport selection. Such shipments may involve other factors beyond what can be captured in the cost-elasticity model employed here.

Ultimately, this led to the adoption of a generally recognizable same-day shipping distance band of 240 miles as a way of using agglomeration theory (*10*) to generate a heuristic to constrain vulnerable outputs that may occur due to the imperfection of the model in capturing additional factors that influence the selection of routing. The results are a freight flow database of Origin-Destination-Commodity-Mode shipments for potential air cargo activity to be picked up at or delivered to the airport, and which are situated within a same-day shipping market threshold. The specification is shown in Equation 1.

EQUATION 1. Specification for Same Day Shipping

$$\sum_{1}^{n} T_{ic} = f\left(d, \left({}^{C_{iP}}/_{C_{in}}\right)\right)$$

Such That d_{pn} <= 500 miles

d_{ip} <= 240 miles

WHERE

T_{ic} = is the international tonnage by commodity (c) produced or consumed in county i

d = distance

C_{iP} = Cost of transporting a commodity in county i to PIT

C_{in} = Cost of transporting a commodity in county i to airport n

d_{pn} = distance between PIT and airport n

d_{ip} = distance between county i and PIT

Positive economic impacts on Southwest Pennsylvania from this diversion rest on the short and intermediate-term assumptions that cargo service that connects PIT with Europe and the Middle East can attract shippers because it will reduce their costs by being closer. The economic impacts will occur because firms will act rationally to save time and money by using PIT.

The impacts on the Southwest Pennsylvania economy are a combination of logistics and transportation industry revenues resulting from additional transportation activity in and out of PIT, increased warehousing / distribution center demand from shippers who need additional inventory management support rerouting cargo through PIT, and reduced transportation cost impacts for businesses using the new service because transportation cost savings can be reinvested and used to expand productivity.

Additional, longer-term benefits to the regional economy might be realized from industry structural changes as business relocation decisions are made once the new international service is well-established. However, this analysis is limited to short and intermediate term effects, so the additional locational operations-related choices for business relocation are not included.

Impacts are specified separately for firms outside of the ten-county region (but within the 240-300 miles of PIT), and those within Southwest Pennsylvania.

Shippers and Receivers Located Outside of the 10-County Southwest Pennsylvania Region. By considering the fractional volume of industry-level supply and demand being satisfied via Europe and the Middle East (relative to total industry supply and demand in each county), the economic dependence of each county-specific industry was estimated for goods coming from or destined for Europe and the Middle East based on production or consumption (measured by value for each industry). This economic activity of the highlighted industries was then further disaggregated to estimate the portion tied to warehousing, air and truck transportation. Direct output of approximately $20.7 million is expected to accrue to businesses in Southwest Pennsylvania that support the movement of goods to and from PIT. Of this amount, $2.4 million is to purchase warehousing services, $14.6 million is to hire trucking and transportation services, with the balance as support for air transportation and related services. *(5)*

Shippers and Receivers Located Within the 10-County Southwest Pennsylvania Region. A different approach is necessary for industries within the 10-county region, because these industries are already consuming transportation and warehousing services in Southwest Pennsylvania. In this case, the regional industry-economic activity was estimated for activity dependent on trade with Europe and the Middle East, and transportation cost savings were assumed based on the change in weighted commodity time-cost for diverting counties. This amounts to a $2.5 million direct reduction in transportation costs for local businesses. These local businesses are focused around technology-based manufacturing and producers and consumers of pharmaceutical based products (such as hospitals, physicians, and pharmaceutical preparation manufacturers).

The total direct stimulus is $23.1 million to industries within the region as identified in the two paragraphs above. As shown in Table 1, the direct, indirect and induced multiplier effects yield an estimated $42.8 million of economic output (including direct, indirect and induced effects), supporting 265 additional jobs within the region, earning a combined $15.9 million of income to be spent within the region. (*11*)

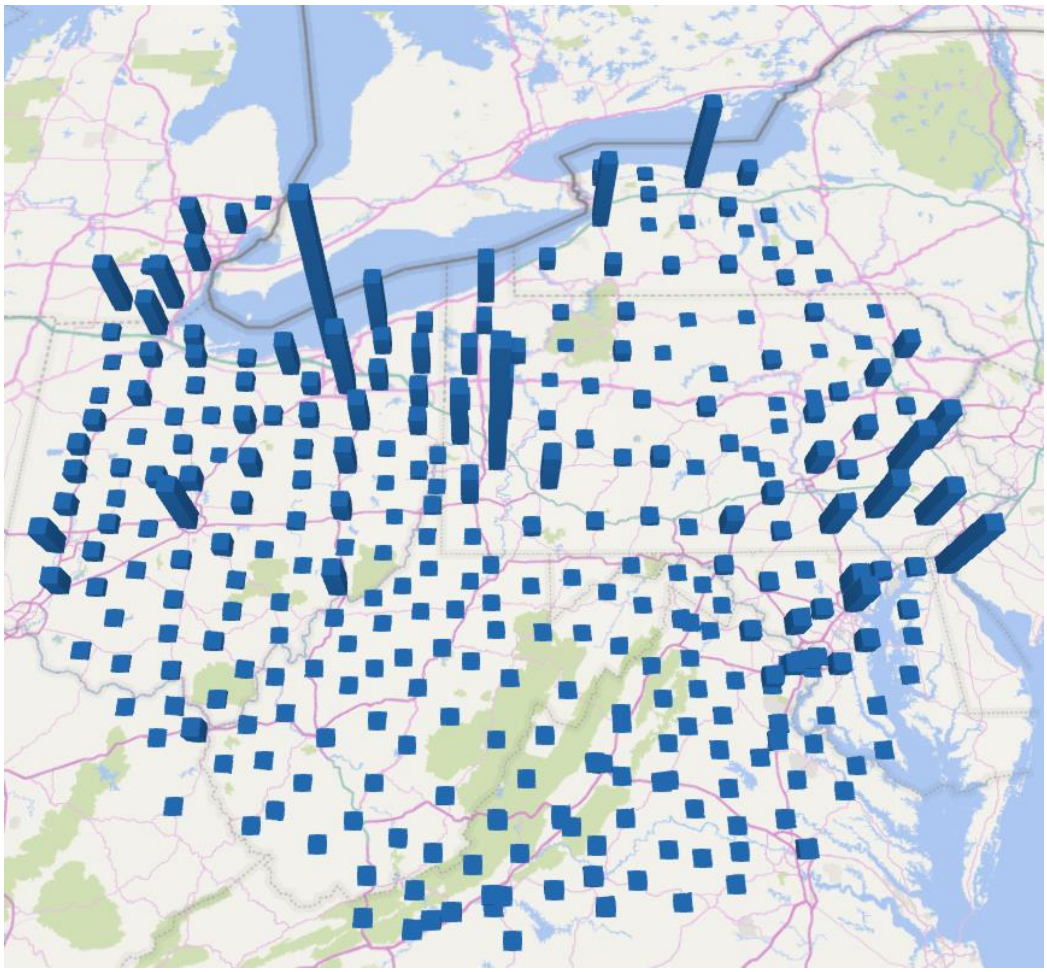
TABLE 1. Industry Sector Composition of Output, Value Added, Job and Income ($Millions)

Industry Code (NAICS)	Industry	Business Output	Value Added	Jobs	Wage Income
111-115, 211-213	Agriculture & Extraction	$0.3	$0.2	1	$0.1
221	Utilities	$0.5	$0.2	0	$0.1
230	Construction	$0.3	$0.1	2	$0.1
311-339	Manufacturing	$2.0	$0.7	5	$0.4
420	Wholesale Trade	$1.3	$0.8	5	$0.5
441-454	Retail Trade	$1.2	$0.8	17	$0.5
481-488	Transportation	$19.7	$9.1	105	$7.1
491-493	Postal & Warehousing	$4.0	$2.4	36	$2.1
511-519	Media and Information	$0.9	$0.4	2	$0.2
521-525, 531-533	Financial Activities	$5.5	$3.4	19	$1.1
541,551,561-562	Professional & Business Services	$2.4	$1.6	21	$1.3
611, 621-624	Education & Health Services	$2.8	$1.7	27	$1.6
711-713, 721-722,811-814	Leisure & Hospitality	$1.5	$0.9	24	$0.7
920	Government	$0.2	$0.1	1	$0.1
Total		**$42.8**	**$22.6**	**265**	**$15.9**

To quantify the potential of the new air service in diversion of air cargo to PIT by shippers and receivers involved in European and Middle Eastern air freight, likely candidate businesses were identified by industry and by county location. The attraction of the new service is the transportation cost savings to these shippers from rerouting their cargo to the new PIT service. Current levels of exports and imports to and from Europe and the Middle East are identified spatially within the U.S. and then further analyzed to identify county-commodity pairs of shipments benefitting from the new air cargo service.

EXPORTS TO EUROPE

Pittsburgh's location puts it into competition with JFK (the dominant U.S. airport for exports to Europe) as well as other airports in the region ranging from Philadelphia (ranked 8th in terms of value of European exports), Cleveland (ranked 5th) and Chicago (ranked 2nd). Figure 2 shows the location of businesses in the PIT market area that are expected to divert exported goods to European markets through PIT. (*5*)



Heights of Bars indicate relative size of exports.

FIGURE 2. Location of Business Exporters of Goods to Europe in the PIT Market Area Expected to Divert to PIT (by Tonnage)

The potential market diversion has been estimated by commodity, based on the mix of industry classifications of business within the wider region representing the market catchment area for PIT. As shown in Table 2, the top commodity categories potentially diverting to use PIT, measured in air cargo value, are transportation equipment, electronics, precision instruments and machinery. The top air cargo categories potentially diverted, measured in tonnage, are electronics, machinery, and plastics/rubber. (*5*)

TABLE 2. Commodity Categories Potentially Diverted to PIT for Export to Europe

Code	Commodity Name	Value ($M)	Tons
37	Transport equipment	$227.7	172
35	Electronics	$218.1	1098
38	Precision instruments	$185.2	768
34	Machinery	$125.6	1429
33	Articles-base metal	$46.0	1041
24	Plastics/rubber	$37.7	1024
21	Pharmaceuticals	$36.4	70
31	Nonmetal mining products	$28.5	601
40	Misc. manufacturing products	$26.2	179
23	Chemical products	$26.1	704
32	Base metals	$17.9	961
20	Basic chemicals	$15.5	408
29	Printed products	$13.3	265
36	Motorized vehicles	$10.9	371
30	Textiles/leather	$6.3	345
7	Other foodstuffs	$2.9	287

The existing airports from which the cargo would be diverted to PIT are located around the region, with Cleveland by far the dominant source for export diversion, followed by Cincinnati. The estimated diverted exports to Europe are largest for Cleveland followed by Detroit and then Washington, DC. Detroit accounts the highest percentage of an airport's cargo exported to be diverted to through PIT Europe, followed by Cleveland and Cincinnati. Table 4, below, shows the volumes and values of expected diversions to PIT for exports as well as for imports.

IMPORTS FROM EUROPE

The top air cargo commodity categories imported from Europe, ranked in value, are pharmaceuticals, machinery and precision instruments. (*5*) The capture of air cargo imports by PIT depends on those areas of consumption that are the ultimate destinations in the region, encompassing the eastern Upper Midwest, the Ohio River Valley and the western portion of the Mid-Atlantic states.

With the geographic locations of businesses and population, and given the mix of industry classifications of business within the wider region representing the market catchment area for PIT, the potential market diversion of imports has been estimated by type of commodity. As shown in Table 3, under this scenario, the top commodity categories diverting to use PIT, ranked by air cargo value, are machinery, basic chemicals, electronics, pharmaceuticals, and precision instruments. The top air cargo categories diverted, measured in tonnage, are machinery, electronics, and precision instruments.

TABLE 3. Commodity Import Categories Diverted to PIT from Europe

Code	Commodity Name	Value ($M)	Tons
34	Machinery	$669.8	6002
20	Basic chemicals	$422.4	276
35	Electronics	$328.8	2670
21	Pharmaceuticals	$316.7	343
38	Precision instruments	$308.9	1638
33	Articles-base metal	$140.9	1358
40	Misc. manufacturing products	$39.4	471
37	Transport equipment	$32.4	640
24	Plastics/rubber	$29.2	1110
30	Textiles/leather	$28.1	430
23	Chemical products	$24.4	470
36	Motorized vehicles	$24.0	1261
31	Nonmetal mining products	$8.5	433
39	Furniture	$5.5	179
29	Printed products	$5.2	94
32	Base metals	$3.4	211
7	Other foodstuffs	$2.8	168
41	Waste/scrap	$1.1	16
28	Paper articles	$1.0	31
3	Other agricultural products	$1.0	124

The leading airports from which the cargo would be diverted to PIT are in the Midwest and mid-Atlantic, with Cincinnati, Cleveland and Philadelphia as the dominant airports for imports from Europe (Table 4). The competitor gateway airports estimated to see the greatest diversion in tonnage terms are Cleveland, Washington, DC, and Detroit.

TABLE 4. Airports from Where PIT May Capture Market Share in European Trade, (by tonnage)

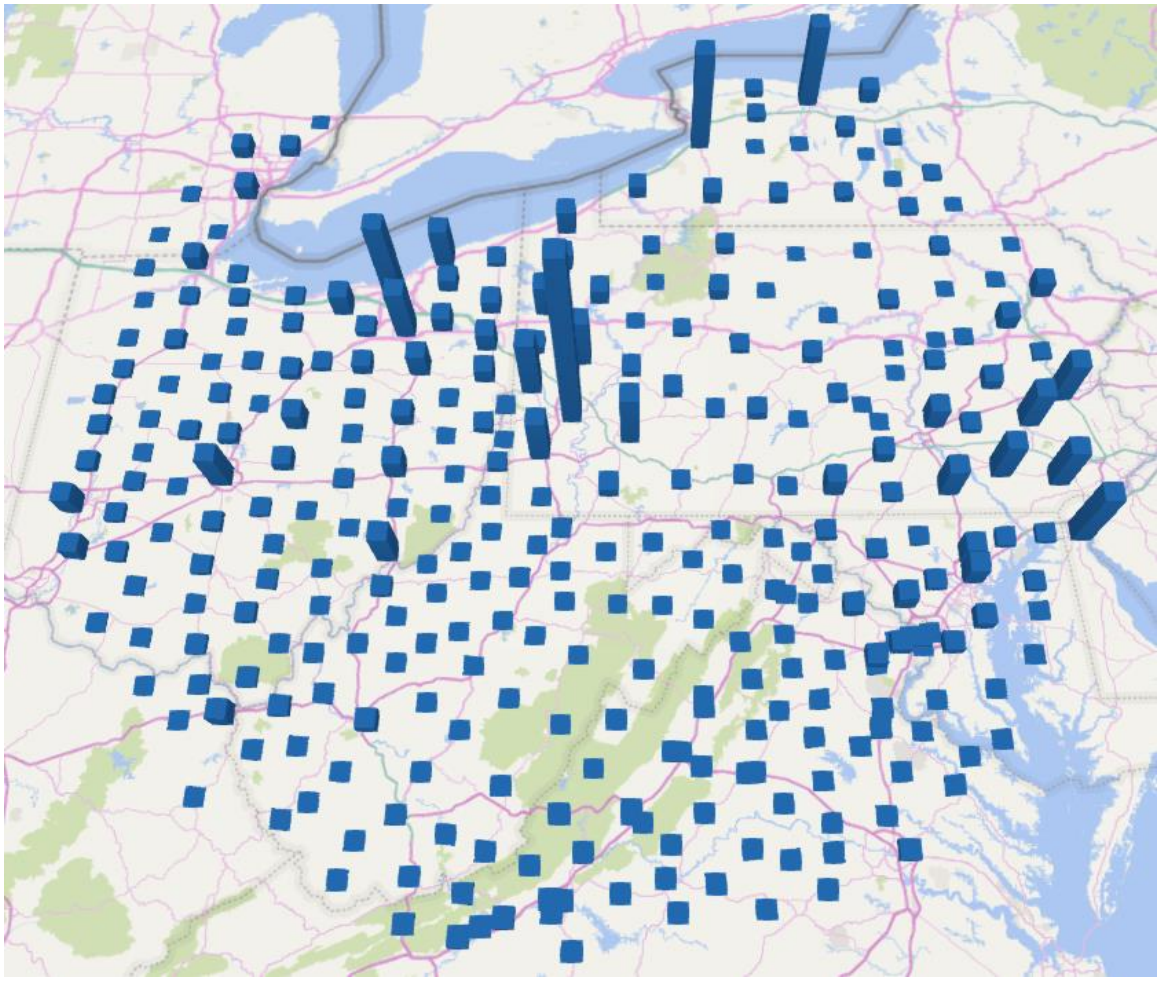
	Airport Diverted From	Value ($M)	Tons	% of Airport, European Trade
Exports	Cleveland, OH	$581.8	5458	7%
	Cincinnati-Lawrenceburg, OH/KY	$181.0	491	6%
	Detroit, MI	$155.0	1902	11%
	Washington, DC	$70.5	1426	5%
	Philadelphia, PA	$38.2	566	1%
Imports	Cleveland, OH	$856.4	8744	16%
	Cincinnati-Lawrenceburg, OH/KY	$759.6	1411	11%
	Washington, DC	$377.2	2870	5%
	Philadelphia, PA	$261.8	2229	4%
	Detroit, MI	$139.1	2752	10%

IMPORT AND EXPORT AIR TRADE WITH THE MIDDLE EAST

EXPORTS TO THE MIDDLE EAST

U.S. air cargo exports to the Middle East exhibit a pattern of use of international gateway airports along the east and west coasts. At the same time, export origination mapped at the county level exhibits a dispersed geography around the country. For PIT, this presents an opportunity to capture market share of that export manufacturing in the region extending roughly from the upper Midwest and Ohio River Valley into Western Maryland and Pennsylvania.

Mapped at the county-level, the largest potential for diverting export cargo to PIT is from businesses located in and around western Pennsylvania, western New York, northeastern Ohio, and central Maryland. On the Figure 3 map, the height of the county bars represents the amount (tonnage) expected to divert based on the model.



Heights of Bars indicate relative size of exports.

FIGURE 3. Location of Business Exporters to the Middle East in the PIT Market Area Expected to Divert to PIT (by Tonnage)

TABLE 5 displays the commodity categories estimated for exports for the Middle East diverted to PIT in order of tonnage, with values for each commodity also provided.

TABLE 5. Commodity Categories Diverted to PIT for Export to the Middle East

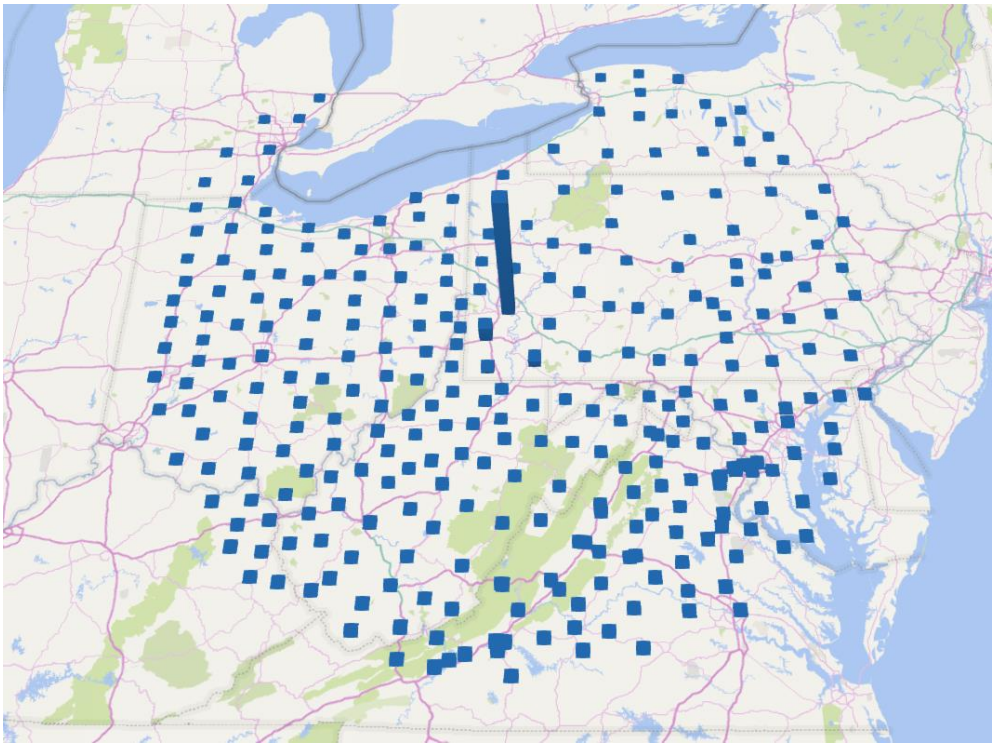
Code	Commodity Name	Value ($M)	Tons
34	Machinery	$105.90	1291
35	Electronics	$202.20	1014
24	Plastics/rubber	$36.00	865
32	Base metals	$18.30	842
33	Articles-base metal	$31.90	779
38	Precision instruments	$178.90	753
20	Basic chemicals	$14.60	528
23	Chemical products	$24.20	526
29	Printed products	$13.60	269
36	Motorized vehicles	$8.80	262
7	Other foodstuffs	$2.90	224
30	Textiles/leather	$5.60	192
31	Nonmetal mining products	$8.60	184
40	Misc. manufacturing products	$23.00	166
37	Transport equipment	$225.50	163
21	Pharmaceuticals	$36.70	70

IMPORTS FROM THE MIDDLE EAST

U.S. imports from the Middle East focus significantly more on pharmaceuticals and precision instruments than the mix of commodities the U.S. exports to that region, although miscellaneous manufactured products is the largest in value of all categories. (*5*)

Based on potential cost savings, most of the likely business prospects for diverting Middle East import cargo to PIT are within its 10-county market catchment area. As shown in Figure 4, potential cost savings primarily accrue to businesses located within Southwest Pennsylvania that are using gateway airports outside the region to import goods as production inputs or finished products from the Middle East. In Figure 4, the height of the county bars represents the tonnage expected to divert.

Table 6 shows that the leading commodity categories imported by air and that may be diverted to PIT are pharmaceuticals and related products, followed by electronics and chemical products.



Heights of bars indicate relative size of imports

FIGURE 4. Location of Business Importers from the Middle East in the PIT Market Area (2014 $M)

TABLE 6. Commodity Categories Diverted to PIT for Imports from the Middle East

Diverted Commodity Category		Value ($M)	Tons
21	Pharmaceuticals	$134.1	288
38	Precision instruments	$5.6	42
40	Misc. manufacturing products	$5.5	25
35	Electronics	$5.2	27
20	Basic chemicals	$4.5	66
34	Machinery	$3.9	23
33	Articles-base metal	$1.7	11
30	Textiles/leather	$1.6	22
29	Printed products	$0.2	3
3	Other agricultural products	$0.1	1
36	Motorized vehicles	$0.1	7
24	Plastics/rubber	$0.1	4
23	Chemical products	$0.1	3
31	Nonmetal mining products	$0.1	2
39	Furniture	$0.1	1

Table 7 displays the international gateway airports from where PIT may draw market share. For exported cargo, Cleveland is the largest in value terms followed by Cincinnati. Cleveland is also largest in tonnage terms followed by Philadelphia. Moreover, more tonnage may be diverted from Cleveland than from the other airports shown. However, Cincinnati would experience the greatest percent diversion, followed by Cleveland. The data presented in Table 7 indicate a relatively small disruption to other airports' existing cargo routings. (*5*)

Imported cargo that would be expected to be diverted to PIT are from northeastern airports, with Newark by far the dominant source for import diversion, followed by Philadelphia. Newark is estimated to be the source of the largest diversion of imported air cargo tons followed by Philadelphia. However, the shares of diverted tonnage in percentage terms is higher for Philadelphia.

TABLE 7. Airports from Where PIT May Capture Market Share in Mideast Trade (by tonnage)

	Airport Diverted From	Value ($M)	Tons	% of Airport Mideast Trade
Exports	Cleveland, OH	$504.20	4061	14%
	Cincinnati-Lawrenceburg, OH/KY	$180.40	381	24%
	Washington, DC	$104.30	1755	8%
	Detroit, MI	$92.40	1097	1%
	Philadelphia, PA	$38.20	530	3%
	Newark, NJ	$20.30	391	< 0.5%
Imports	Newark, NJ	$141.60	349	3%
	Philadelphia, PA	$10.00	126	5%
	Cleveland, OH	$10.10	43	3%
	Detroit, MI	$0.50	4	4%
	Washington, DC	$0.20	3	Less than 0.5%
	Cincinnati-Lawrenceburg, OH/KY	$0.50	2	6%

CONCLUSIONS

The analysis presented above indicates that time and out-of-pocket costs for ground transportation, and expectations of rational behavior by firms, is a basis for airports and airline companies to plan new cargo routes. However, in the short-to-intermediate term, success at one airport will be at the expense of other airports that are farther away from shippers and receivers of airborne cargo.

In our case study, European commerce presents a greater opportunity for PIT to capture cargo than does Middle East commerce. In other words, the opportunity to divert goods movement from other airports is stronger in the Luxemburg leg of the projected cargo service.

Table 8 shows that most demand for the new air cargo service is expected to be generated from outside of the ten-county Southwest Pennsylvania region. More than 80% of PIT's potential market capture of exports to both the Luxemburg and Middle East legs of freighter flights are indicated to originate outside of PIT's primary service region. In terms of imports from Europe, the destinations of more than 90% of the tonnage captured from other airports are expected to be outside the ten counties. However, more than half of the imports from the Middle East are expected to be delivered within Southwest Pennsylvania.

A growth in demand for cargo services at PIT will lead to increased logistics services required for moving and storing the additional cargo, including transportation and warehousing near the airport, and will increase efficiency for producers able to ship through an airport closer to their plants. The extent of impacts will vary by the location of companies that will be motivated to export through PIT to Europe and the Middle East. Companies located near the airport will benefit due to improved efficiency, but, as the companies are located in the region, the diversions are not expected to lead to net gains in Southwest Pennsylvania logistics sectors. However, both efficiency benefits accruing to shippers and net impact to logistics sectors in Southwest Pennsylvania are expected from cargo shipped from companies located outside the region.

TABLE 8. Origins and Destinations of Exports and Imports Though Proposed New Service (In Tons)

Region of Export/Import	Exports - Points of Origin			Imports - Points of Destination		
	SWPA	Elsewhere	Total	SWPA	Elsewhere	Total
Europe	1,213	8,663	9,876	1,456	16,561	18,017
Middle East	1,428	6,792	8,221	287	240	527

Note: SWPA is Southwest Pennsylvania.

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