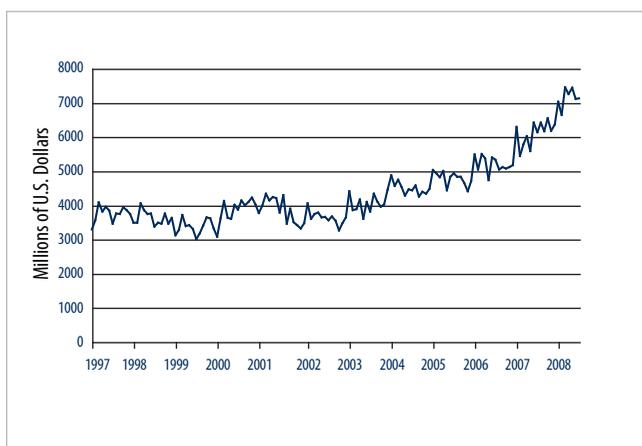


## The Size and Structure of Exports in the Fifth District Economy

By Sonya Ravindranath Waddell

In the last 10 years, exports have played a growing role in the national economy. This has been especially true in the Fifth District since mid-2002.

FIGURE 1: EXPORTS FROM THE FIFTH FEDERAL RESERVE DISTRICT



SOURCES: Bureau of the Census and Haver Analytics

For much of 2008, export activity was cited as a ray of hope in troubled times. With the U.S. economy in recession and the dollar falling against other currencies, international demand for U.S. consumer goods was hailed as a way to replace declining domestic demand, boost the shaky American manufacturing sector, and reduce the current account deficit. More recently, the strengthening of the U.S. dollar and the slowing of the global economy have dragged down export activity; the release of September's export data brought with it concerns of a decline in international trade just as the fall in domestic consumer and business spending has sharpened. Still, in the last 10 years, exports have played a growing role in the national economy.

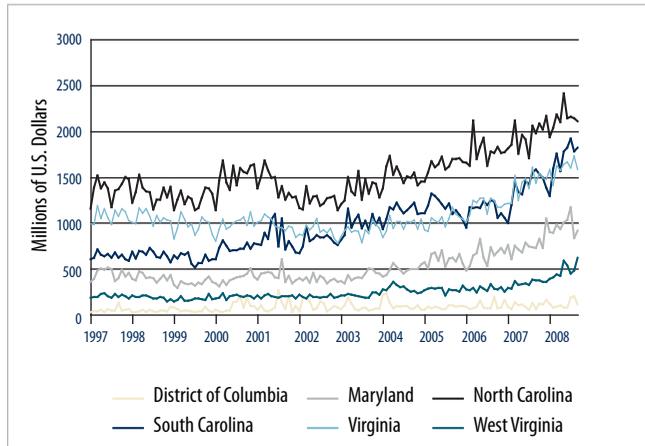
In this *Economic Brief*, we discuss export trends specifically in the Fifth Federal Reserve District. We use the Origin of Movement (OM) data compiled by the Foreign Trade Division of the U.S. Bureau of the Census to dissect export trends in District jurisdictions and begin to understand the reasons behind changes in regional export activity, with particular attention to the industries producing District exports and the countries importing them.

### TRENDS IN FIFTH DISTRICT EXPORTS

As shown in Figure 1, the Fifth District has experienced a relatively steady expansion in export activity since mid-2002. Exports were particularly strong between October 2007 and July 2008 when year-over-year growth was more than 20 percent in all but one month. This is not an expansion unique to the Fifth District. In fact, in the past 10 years, national exports have grown at an average annual rate of 7.9 percent — slightly faster than the 7.8 percent average annual growth in the District. Still, the Fifth District has maintained its approximately 6 percent share of U.S. exports over the decade. Furthermore, although District export activity started to weaken a bit in recent months, year-over-year export growth has remained high, at 10.9 percent in August and 16.3 percent in September.

A glance at Figure 2 shows that export activity expanded in Maryland, North Carolina, South Carolina, and Virginia — the four states that have contributed more than 90 percent of Fifth District exports every month. Given the service-based nature of the Washington, D.C., economy, its small and volatile share of Fifth District goods exports is not surprising. West Virginia exports also comprise a small percentage of Fifth District

**FIGURE 2: EXPORTS FROM FIFTH DISTRICT JURISDICTIONS**



SOURCES: Bureau of the Census and Haver Analytics

**FIGURE 3: TOP FIVE IMPORTERS OF FIFTH DISTRICT GOODS IN 2007 (PERCENTAGE OF TOTAL STATE EXPORTS TO THAT COUNTRY IN 2007)**

Ranking	Maryland	North Carolina	South Carolina
1	Canada (16.2)	Canada (24.2)	Germany (22.7)
2	Egypt (7.8)	Japan (7.6)	Canada (19.6)
3	U.K. (5.3)	China (7.6)	Mexico (5.9)
4	Mexico (5.2)	Mexico (7.4)	U.K. (5.7)
5	China (5.0)	France (4.2)	China (3.8)
6		Germany** (3.9)	
Total****	39.60%	54.90%	57.70%

Ranking	Virginia	West Virginia*	Fifth District***
1	Canada (16.2)	Canada (28.6)	Canada (21.6)
2	China (6.5)	Belgium (9.7)	Germany (8.6)
3	U.K. (6.5)	Japan (8.3)	China (6.4)
4	Germany (5.7)	China (5.8)	Mexico (4.8)
5	Portugal (5.3)	Brazil (4.4)	U.K. (3.8)
6	-	-	-
Total	40.20%	56.90%	45.20%

**NOTES:**

\* 2007 data are unavailable for West Virginia, so the percentages for that state are from 2006.

\*\* Determining the "top five" importers using data from only one year is arbitrary in all cases, but exports to Germany from North Carolina surpassed those to France in almost all years prior to 2007, so six countries were included for the state.

\*\*\* Fifth District percentages do not include West Virginia figures.

\*\*\*\* Components may not sum to totals because of rounding.

exports and suffer from some missing and unreliable data. For these reasons, Washington, D.C., and West Virginia will be excluded from much of the following discussion.

**MAJOR IMPORTERS AND EXPORT GOODS**

In 2007, only two countries were in the top five importers for every Fifth District jurisdiction: Canada and China. Figure 3 below presents the top importers across the Fifth District.

As in the nation, most goods exports out of the Fifth District are manufactured; in each of the past 10 years, manufactured goods accounted for between 91 percent and 93 percent of total Fifth District exports. In 2007, the state with the lowest percentage of manufactured goods as exports was Virginia (83.7 percent) and the state with the highest percentage was South Carolina (96.2 percent).

The makeup of a state's exports depends on the industrial capacity of the state and demand in the country of import. For example, transportation equipment, machinery, and chemicals are in the top five exports from South Carolina to almost all of its major importers. However, transportation equipment makes up 21.2 percent of the state's exports to Canada, 63.6 percent of its exports to the United Kingdom (U.K.), and 86.0 percent of its exports to Germany. Meanwhile, chemicals compose 10.2 percent of South Carolina's exports to Canada, 8.0 percent of its exports to the U.K., and 22.2 percent of its exports to China. As another example, while chemicals were in North Carolina's top exports to Canada, Japan, Mexico, and Germany, about only 7 percent of the Tarheel state's exports to France consisted of chemicals. Fifty-six percent of North Carolina's exports to France in 2007 were transportation equipment.

The recent five-year export boom has not been generally associated with a large change in the Fifth District's industrial framework; the structure of manufactured exports from 2002 to 2007 remained about the same in Maryland, North Carolina, South Carolina, and Virginia. This is not to say that there were no changes in export composition. Virginia beverages and tobacco exports continued a downward trajectory while the state experienced a 10 percentage point increase in the export share of computer equipment and a 6 percentage point drop in the share of machinery. There was also some change in the makeup of exports within a trading relationship. For instance, in South Carolina apparel made up 6.8 percent of all exports to China in 2002, but only 0.5 percent in 2007. Many of these changes reflect share reductions and not quantity reductions; for example, the share of machinery exports from Virginia to China fell 11.1 percentage points from 2002 to 2007, but the total value of machinery exports from Virginia to China grew almost 4 percent. Despite these smaller, targeted changes, the only overall industrial trend in the Fifth District from 2002 to 2007 was an increase in transportation equipment sent to Europe (Germany, France, and the U.K.) from every state.

## WHY THE EXPORT BOOM?

Gazel and Schwer used a shift-share model to measure the relative importance of demand and supply factors in determining the level of state foreign exports. Identifying a sectoral mix as a proxy for supply conditions and the relative mix of foreign markets as a proxy for demand conditions, their results suggest that demand conditions are as important, if not more important, than supply conditions in explaining foreign exports among states. Although theoretically, exporters can quickly shift their sales from slow-growing economies to fast-growing international markets, evidence suggests that they do not. In further research, Cronovich and Gazel use a panel data set of exports across the 50 U.S. states to estimate a fixed effects model and found that exports are significantly positively correlated with trade-weighted foreign income, and that real exchange rates affect exports negatively and with a lag. Thapa and Dhakal engage in a similar estimation technique using data from Kentucky and find that the national incomes of importing countries and both contemporaneous and lagged exchange rates affect Kentucky exports.

As discussed earlier, the industrial composition of Fifth District exports has not changed significantly in the last five years; therefore, it seems unlikely that supply-side factors entirely explain the recent growth in exports. Although we will not look at the size of the importing countries' economies in depth, certainly China's extraordinary growth from 2002 to 2007 should explain at least some of China's new place as a top five importer of Fifth District goods. Further analysis is necessary to better understand the role that supply- and demand-side factors play in export levels in the Fifth District, particularly as we enter a period of weakening overseas demand.

Exchange rates also play a role in export levels. The correlation between the Canadian/U.S. exchange rate and total Fifth District exports to Canada between 1997 and 2007 was -0.91 (and highly significant). The correlation between the China/U.S. exchange rate and total Fifth District exports to China between 1997 and 2007 was -0.88 (and also highly significant). Still, not all countries offer the same results. For example, the correlation between the value of Fifth District exports to Germany and the dollar/euro exchange rate was 0.70 and the correlation

between the dollar/pound exchange rate and exports to the U.K. was 0.51 (and only significant at the 10 percent level). Meanwhile, exports to Mexico continued to rise as the dollar appreciated against the new peso.

## CONCLUDING THOUGHTS

There are many possible explanations for the recent boom in both national and Fifth District overseas exports. It is likely that supply-side conditions, strong international demand, exchange rate movements, and policy developments such as the North American Free Trade Agreement all contributed to the growth. It will be important to explore these trade dynamics more deeply at the regional level in order to better understand the future role of international exports in the Fifth District economy. ■

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## ENDNOTES

<sup>1</sup> The OM data reflect the transportation origin of exports, not their origin of production, a limitation that has deterred many academics and practitioners from using the data set. However, work by Cassey as well as Cronovich and Gazel indicate that OM data are usable for Origin of Production data with the primary disclaimer that OM data can be inaccurate for agricultural and mining exports. This potential inaccuracy arises from the fact that virtually all agricultural and mining goods are sold abroad by intermediaries, which can lead to serious mis-attributions in the data. In order to limit inaccuracy, we confine our analysis primarily to data on manufactured goods and, for time-series accuracy, only to data collected after the institution of NAICS categorization in 1997.

For more information, see the following papers:

- Cassey, Andrew. 2006. "State Export Data: Origin of Movement vs. Origin of Production." Munich Personal RePec Archive Paper No. 3352.
- Cronovich, Ron, and Ricardo Gazel. 1999. "How Reliable are the MISER Foreign Trade Data?" unpublished.

<sup>2</sup> Gazel, Ricardo, and R. Keith Schwer. 1998. "Growth of International Exports Among the States: Can a Modified Shift-Share Analysis Explain It?" *Regional Science Review* 21: 185-204.

<sup>3</sup> Cronovich, Ron, and Ricardo Gazel. 1998. "Do Exchange Rates and Foreign Incomes Matter for Exports at the State Level?" *Journal of Regional Science* 38: 639-657.

<sup>4</sup> Thapa, Samanta, and Dharmendra Dhakal. 2004. "An Empirical Investigation of the Impact of Exchange Rates and Foreign National Incomes on Kentucky's Exports." *Journal of Applied Economics and Policy* 23: 26-37.



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