

The Gulf of Mexico Shrimp Processing Sector and Adaption to Increasing Imports

El Sector Procesador de Camarones del Golfo de Méjico y su Adaptación al Aumento de las Importaciones

Les Processeurs de Crevette du Golfe du Mexique et leur Adaptation à l'Augmentation des Importations

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ABSTRACT

The shrimp industry is by far the largest income generator among the Gulf of Mexico commercial fisheries. Since the 1990s, however, its economic viability has rapidly deteriorated due, primarily, to an increasing import base and a concomitant decline in the price of the harvested product. The harvesting component of the industry has responded to the economic decline by significantly reducing effort primarily via a large decline in the number of vessels targeting shrimp. While the impacts on the harvesting sector associated with increasing imports and declining output price have been theoretically and empirically analyzed in a number of studies, the impacts on the processing sector have not been considered in great detail. On one hand, domestic shrimp processors may benefit from higher imports as they present an additional source of raw material that can potentially be used in domestic processing activities. However, imported processed shrimp may also compete directly with domestically processed product. Direct competition between imported and domestically processed shrimp becomes more likely as overseas processors increasingly move to value-added processing activities. The purpose of this paper is to examine the impact of imported shrimp on the Gulf of Mexico shrimp processing sector. The analysis will be conducted by product form and with an emphasis placed on changes in marketing margins and subsequent changes in market structure.

KEY WORDS: Shrimp, processing, adaption

INTRODUCTION

U.S. per capita consumption of shrimp increased from about 1.4 pounds in the early 1980s to 4.4 pounds in 2006 before falling to 4.1 pounds in 2009 (U.S. Department of Commerce 2010). The increase in per capita consumption from 1990 to 2009 in conjunction with a nearly 25% increase in population during the period resulted in an additional one-billion pound source requirement; from 734 million pounds to 1.7 billion pounds.

The Gulf region (Florida west coast through Texas) accounts for the majority of U.S. shrimp production and, with imports, support a large processing sector. While Gulf production has remained relatively stable over the past three decades, imports have increased significantly. The overall purpose of this paper is to briefly examine the Gulf of Mexico processing sector and the impact that imports have had on the sector.

To accomplish this objective, the next section of the paper briefly reviews changes in Gulf of Mexico shrimp production and imports. Then, attention is given to the Gulf of Mexico shrimp processing sector and the relationship between the growth in imports and changes in the processing sector. Some primary findings are provided in the final section of the paper.

GULF SHRIMP PRODUCTION AND IMPORTS

In order to examine the Gulf of Mexico shrimp processing sector and the impact that imports have had on the sector, it is first instructive to provide some background information specific to Gulf of Mexico shrimp production and shrimp imports. This background information is presented in this section of the paper.

Gulf Shrimp Landings

With a 2009 dockside value of \$314 million, the shrimp fishery is the largest contributor to the \$615 million (2009) Gulf of Mexico commercial fishing sector. Annual Gulf shrimp production (heads-on weight) during 1990 - 2009 is provided in Figure 1. While exhibiting a significant amount of annual variation, the yearly changes are not persistent and, over time, production returns to its long-run average. These observed short-run changes are primarily the result of changes in environmental conditions that influence recruitment and growth. Since the primary species of shrimp landed in the Gulf—brown and white—are short-lived animals, with maximum age of about one year, any short-run deviations from the long-term average will be temporary in nature assuming environmental conditions return to normal and there is a sufficient amount of effort to harvest the available crop. Overall, annual harvest of Gulf shrimp during 1980 - 2009 averaged 225 million pounds with annual production ranging from less than 200 million pounds to almost 300 million pounds.

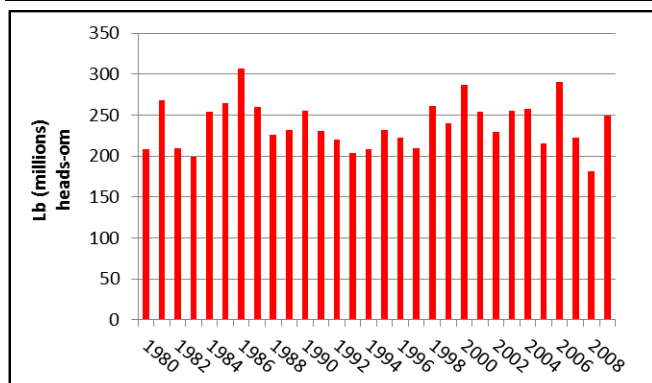


Figure 1. Gulf of Mexico shrimp landings, 1980-2009.

While the long-run production of Gulf shrimp in pounds has remained stable over time, the same cannot be said about the value of landed product; especially when the influence of inflation is removed. As indicated in Figure 2, the long-run dockside value of the Gulf shrimp harvest has, overall, been declining whether considered on a current or deflated basis. This decline has been particularly pronounced since 2001. On a current dollar basis, the value of Gulf production fell from an average of just over \$400 million annually during 1980 - 1984 to about \$350 million annually during 2005 - 2009. After adjusting for inflation, the decline was approximately 40%, from \$899 million to \$367 million (expressed in 2009 dollars).

Shrimp Imports and Influence on Gulf Price

While there are several reasons for the sharp decline in the Gulf dockside shrimp price beginning in 2001, the overriding one is that of increasing imports. The source of these imports is from more than 40 countries throughout the world with Asian countries dominating the field. As indicated by the information in Figure 3, import growth has been large during the considered timeframe with total imports (heads-on equivalent weight) advancing from an average of 533 million pounds annually during 1980-1984 to 2.3 billion pounds annually during the 2005-2009 period. Furthermore, as indicated, much of this increase

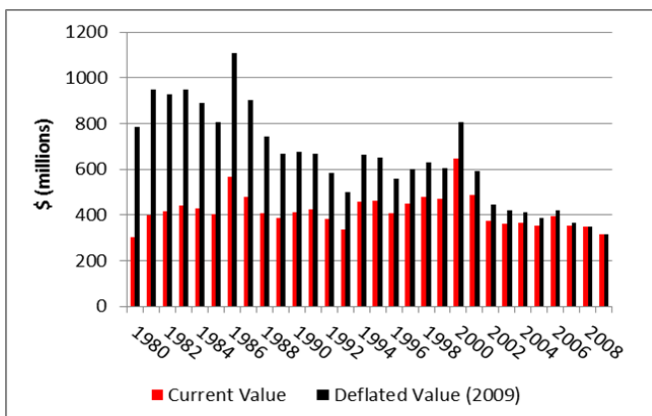


Figure 2. Current and deflated value of Gulf of Mexico shrimp landings, 1980 - 2009.

has occurred post 2000. Given the strong U.S. economy throughout the later portion of the 1990s and the concomitant increase in demand for shrimp, the increase in imports during the 1990s did not lead to any sharp decline in the Gulf of Mexico dockside value (or price). However, the large increase in imports post 2000 combined with a number of other factors, including a recession that officially began in the third quarter of 2001 and a second recession beginning in the last quarter of 2007 and lasting through mid-2009, resulted in a sharp and prolonged decrease in the Gulf of Mexico dockside value (via a change in price). A detailed examination of possible factors influencing this price decline can be found in Keithly and Poudel (2008).

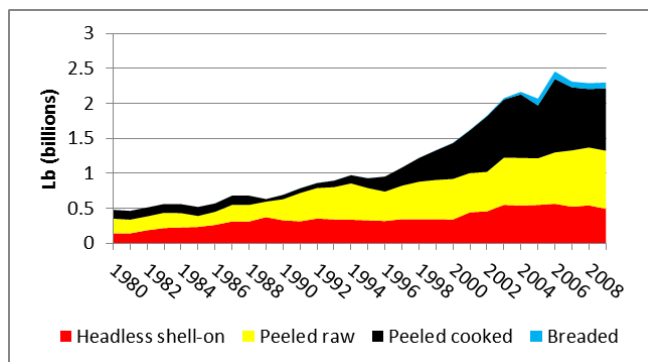


Figure 3. U.S. shrimp imports by product form (equivalent whole-weight basis), 1980 - 2009.

As indicated by the information in Figure 3, the composition of the import base gradually changed over the 1980 - 2009 period with value-added products comprising an increasing share of the total Imports of peeled raw product, for example, increased from about 300 million pounds (whole weight basis) in 1990 to more than 800 million pounds in the late 2000s. Peeled cooked imports increased from about 60 million pounds (whole weight equivalent) to more than 800 million pounds. Imports of headless shell-on shrimp, by comparison, exhibited a much more modest increase — from about 325 million pounds (whole weight basis) in 1990 to 500 - 550 million pounds by the late 2000s.

THE GULF OF MEXICO SHRIMP PROCESSING SECTOR

The Gulf of Mexico shrimp processing sector uses both domestic and imported product as input in its processing activities. Total annual output by the Gulf processing sector, expressed on a whole-weight equivalent basis is given in Figure 4 for the 1980 - 2009 period. As indicated, total production averaged about 370 million pounds annually during the period of analysis with annual production ranging from a low of less than 300 million pounds (1980 and 2008) to about 470 million pounds in 2000. As observed with landings, while there is significant variation in the annual processed quantity, no long-run trend is apparent.

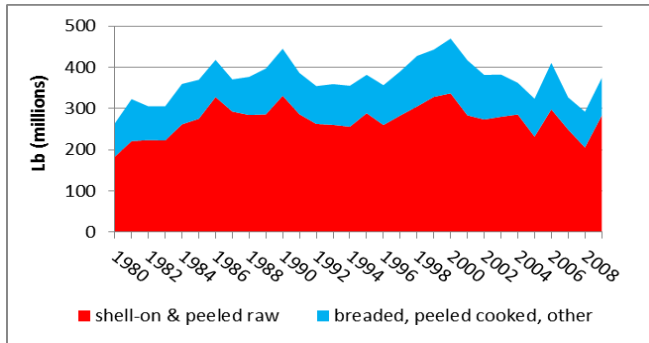


Figure 4. Annual Gulf of Mexico shrimp processed production of shrimp, 1980 - 2009.

As further indicated by the information in Figure 4, two products – headless shell-on and peeled raw- account for the majority of Gulf processed output. Overall, with annual production averaging 272 million pounds, these two products represented more than 70% of total production during 1980 - 2009. Other products produced include peeled cooked, breaded, and a large number of miscellaneous products such as dried shrimp. These products represented less than 30% of the Gulf processing activities, by poundage, during the 1980 - 2009 period.

Analyses by Keithly and Roberts (1994) and Keithly et al. (2006) indicate that virtually all shrimp landed in the U.S. Gulf is processed in that region. As noted by Keithly and Roberts (1994) and Keithly et al. (2006), the two primary products produced from the domestic landings are a headless shell-on product and a peeled-raw product. The production of these two product forms (converted to a whole weight basis) and deflated value (2009 Consumer Price Index [CPI] used as the base) are presented in Figure 5. Mirroring the dockside price, the price of the processed product has fallen sharply, particularly after 2000. This decline in deflated value has transpired despite long-run stability in processed poundage (the result of virtually all harvest being used in the processing sector and long-run stability in harvest).

Comparison of the processed shrimp price (headless shell-on and peeled-raw) with the Gulf dockside shrimp price indicates that the marketing margin has significantly fallen over time (Figure 6), particularly since 2001 and the

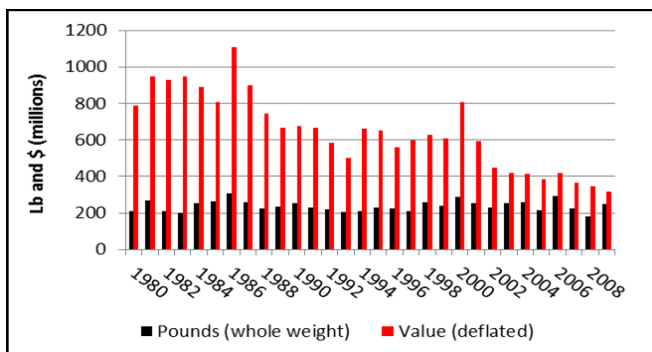


Figure 5. Gulf processed pounds (headless shell-on and peeled-raw products) and deflated value of processed product, 1980 - 2009.

associated rapid rise in imports of peeled-raw product (Figure 3). The marketing margin, by definition, reflects the difference between the processed price and the dockside price or, stated somewhat differently, the cost of inputs (including normal returns to capital and labor) to transform the product. If costs of these inputs did not significantly decline, one could state with certainty that the profit per unit output has also fallen.

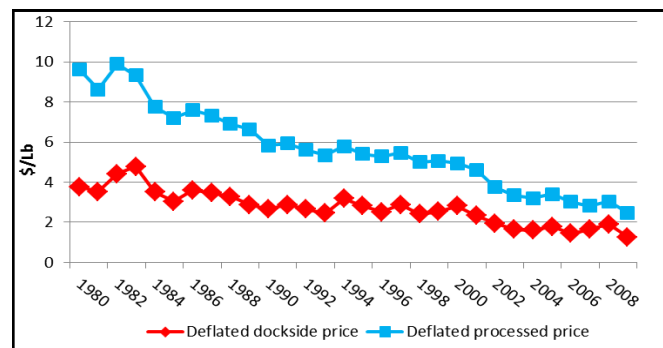


Figure 6. Relationship between deflated processed and dockside prices (2009 base), 1980 - 2009.

Given the reduction in margin and, one would hypothesize, associated profit per unit of output, a large proportion of the processing establishments have exited the industry while others have coped with the declining per unit profitability by increasing output. The decline in number of firms in association with the declining marketing margin is given in Figure 7 while the increase output per firm is considered in Figure 8. As indicated, in association with the declining marketing margin the number of firms fell from almost 100 in the early 1990s to the mid-40s by the late 2000s. However, production per firm has increased, thereby mitigating, at least to some extent, the declining profitability per unit of output. Given that the long-run domestic shrimp harvest has been stable, along with the fact that virtually all of the landings are used by existing processors, it is apparent that the increased output per firm is the result of a reduction in the number of firms.

In general, the price received by Gulf processors for the two primary products, headless shell-on and peeled-raw, closely mirrors the import prices associated with these two products. With respect to the headless shell-on product, there are generally only small deviations between the Gulf price and import price (Figure 9). With respect to the peeled-raw product, the Gulf price generally exceeded the import price during the mid-1980s to early 1990s but since then the import price has consistently exceeded the domestic price (Figure 10). While the reason for this change is not known with certainty, it coincides with that period during which U.S. imports of farm-raised shrimp from Asian countries expanded rapidly. As such, one might hypothesize that, beginning in the early 1990s, there was an increased use of this farm-raised shrimp (which is desired because of its uniform size and year-round availability) in the raw-peeled product exported to the U.S. market. Given

its desirability, a premium was likely attached to the product.

Finally, a comparison of the domestic headless shell-on price (Figure 9) and the domestic peeled-raw price (Figure 10) reveals that the price received for the headless shell-on product consistently exceeds the price received for the peeled-raw product but that the price differential has been narrowing in recent years. The higher price associated with the headless shell-on product is the result of a larger-sized shrimp generally being used in the production of the

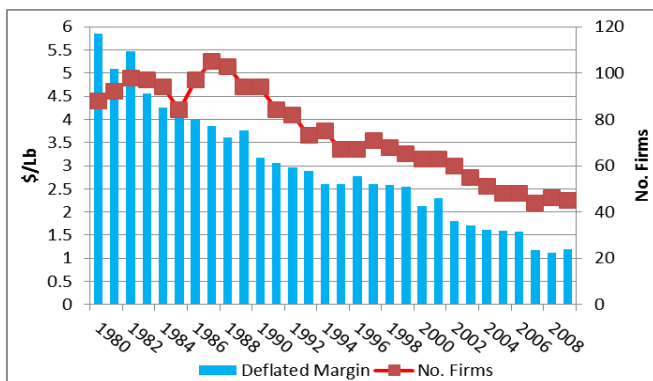


Figure 7. Change in number of Gulf shrimp processors in relation to change in marketing margin, 1980 - 2009.

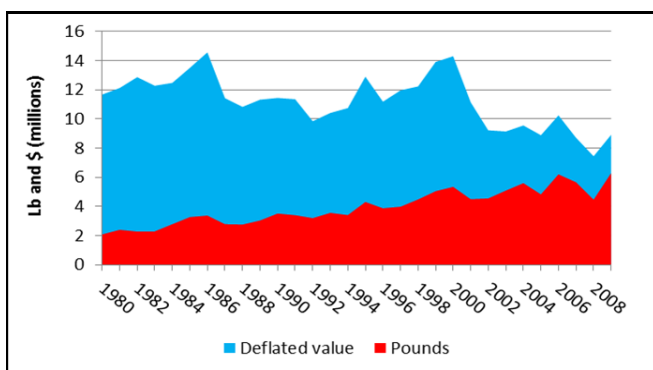


Figure 8. Average output per firm (headless shell-on and peeled-raw products) and current value of output per firm, 1980 - 2009.

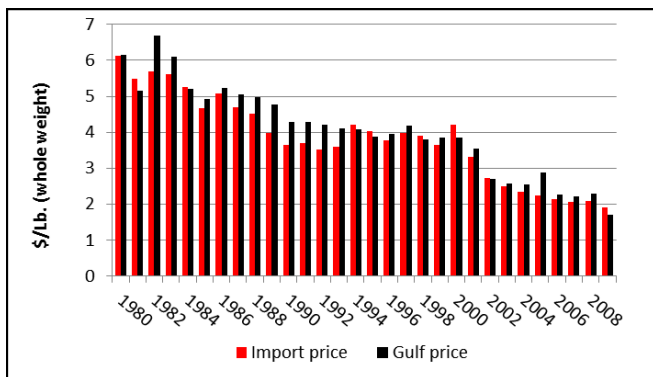


Figure 9. Relationship between the domestic processed price and import price for headless shell-on product, 1980 - 2009.

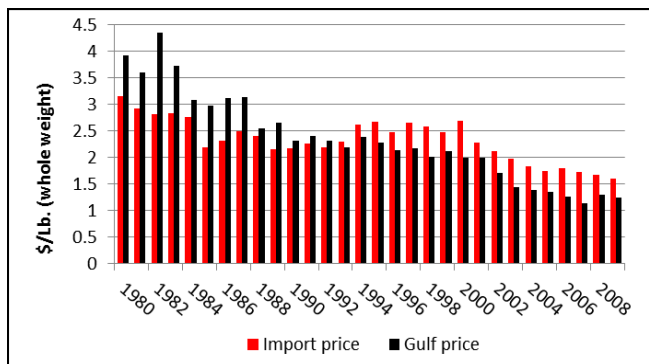


Figure 10. Relationship between the domestic processed price and import price for peeled-raw product, 1980 - 2009.

headless shell-on product *vis-à-vis* the peeled-raw product. Roberts and Keithly (1991), however, document the significantly greater overall economic contribution associated with the peeled-raw product resulting from additional value-added activities.

CONCLUSIONS

Using secondary National Marine Fishery Service data, the overall objective of this paper was to examine the impact that shrimp imports have had on the Gulf of Mexico shrimp processing sector. The most general conclusion that can be made is that the impact has been large. While the overall amount of shrimp that is processed on an annual basis does not appear to have been significantly influenced by the large increase in imports, the same cannot be said with respect to the per pound marketing margin (and presumably the per pound profitability). Specifically, as a result of increasing imports, the marketing margin per unit of output has fallen significantly over time which has resulted in a significant contraction in the number of processing firms. The contraction in the number of firms, however, has allowed remaining firms to increase output per firm; mitigating to some extent the overall reduction in per unit profitability. Finally, assuming no long-term abatement in the growth in imports, it is relatively clear from the analysis that further contractions in the domestic processing sector will be forthcoming with each remaining firm, on average, handling a greater amount of the landed product.

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