

THE POTENTIAL IMPACTS OF NAFTA DISINTEGRATION ON U.S. COTTON

Bing Liu
Darren Hudson
Texas Tech University
Lubbock, Texas

Abstract

The Trump administration's decision to renegotiate the North American Free Trade Agreement (NAFTA) began in Washington, D.C. on August 16 with an optimistic completion date by the end of the year. The movement in the NAFTA renegotiation is still unclear. Considering that Mexico is one of the largest market for U.S. cotton exports, any changes related to Mexican imports of U.S. cotton should have significant implications for the U.S.-Mexico cotton markets. This analysis summarizes the estimation results of an econometric and simulation model that allows for the assessment of potential implications of plausible scenarios on the U.S.-Mexico cotton markets over the next 10 years. Our simulation results indicated that declining Mexican cotton imports would put downward pressure on the U.S. cotton farm prices. But, the price impacts dissipated over time and the average rates were minimal over the entire projection period. Moreover, decreased cotton demand from Mexico would do little to curb the total U.S. cotton exports over the projection period, largely because U.S. exports will simply be diverted to other emerging textile producing countries, such as Bangladesh and Vietnam.

Introduction

The Trump administration's decision to renegotiate the North American Free Trade Agreement (NAFTA), a trade deal aiming to create a free-trade zone among the North American countries, began in Washington, D.C. on August 16 with an optimistic completion date by the end of the year. Accounting for almost 100 percent of Mexico's total cotton imports, the United States remain the main supplier of cotton to Mexico since NAFTA's implementation in 1995 (USDA). The recent NAFTA renegotiation is certainly going to have important implications for the U.S.-Mexico cotton trade. This analysis summarizes the estimation results of an econometric and simulation model that allows for the assessment of potential implications of plausible scenarios on the U.S.-Mexico cotton markets.

Background

NAFTA is designed to expand the flow of goods, services and investment among Mexico, Canada, and the United States by eliminating tariff barriers (import duties, taxes on imported goods), non-tariff barriers (import quotas, licensing schemes), and technical barriers to trade completely or phased them out over a 5- to 15-year period (Rosson *et al.*, 1999). Prior to 1994, Mexico levied a 10-percent tariff on U.S. cotton. Under NAFTA, Mexico gradually eliminated this tariff over the 9-year period that ended on January 1, 2003 (Zahniser and Link, 2002). NAFTA has led to a significant increase in U.S. cotton exports to Mexico. Figure 1 presents the Mexican cotton imports pre- and post-NAFTA and shows average annual imports of U.S. cotton has increased by 817% compared with the pre-NAFTA average of 145,000 bales. With purchases exceeding 1 million bales, Mexico has emerged as one of U.S. raw cotton's top five export destinations, accounting for about 8 percent of U.S. total cotton exports in recent years. Thus, understanding the impacts of Mexican cotton imports changes related to potential NAFTA changes is important.

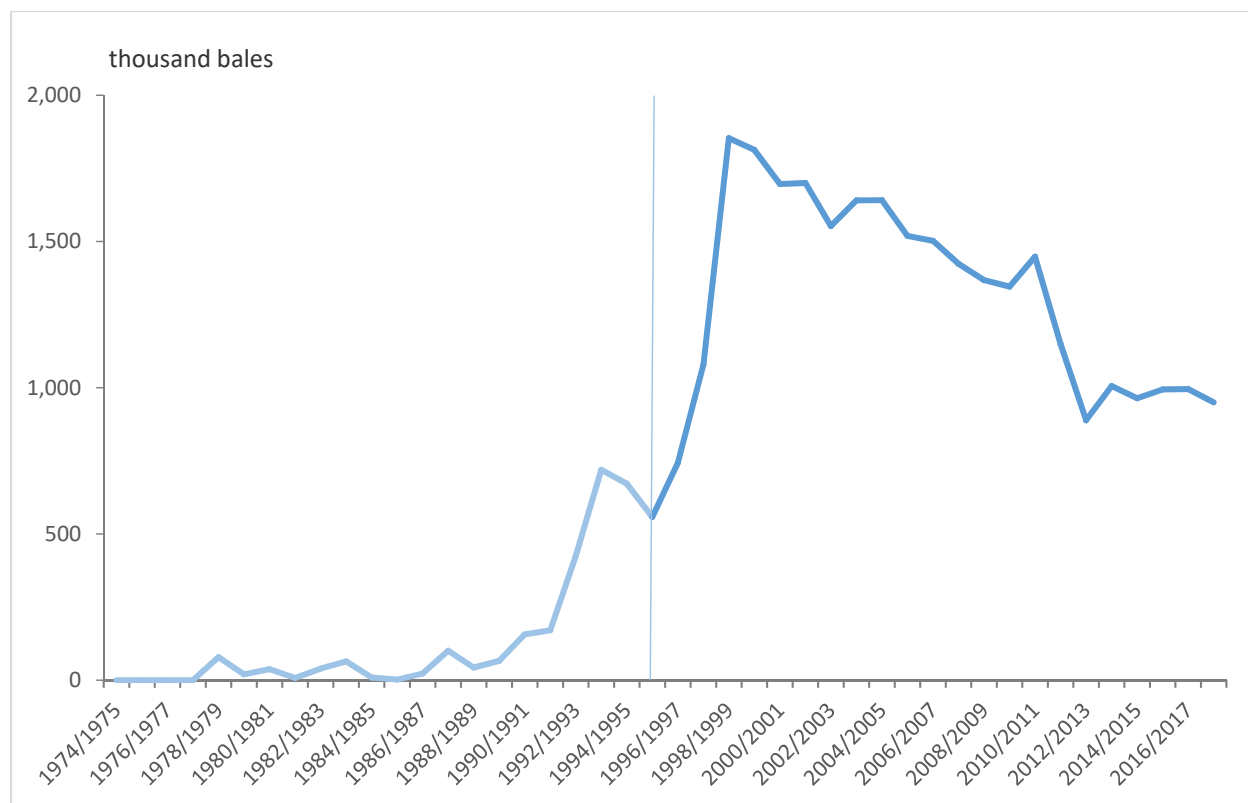


Figure 1. U.S. Cotton Exports to Mexico, Pre- and Post-NAFTA.

Methods

The Global Fibers Model at the International Center for Agricultural Competitiveness at Texas Tech University was used to provide estimates of the impacts of lower Mexican cotton imports on the U.S.-Mexico cotton markets for the future years. This partial equilibrium model representing the world fiber markets incorporates supply and demand models for the United States and 23 other major producing and consuming countries and regions. It is used to perform analysis on the expected behavior of natural fiber markets to potential changes in trade, technological, economic and policy factors, and evaluate the impacts of these changes on the 24 country/regional cotton and textiles markets.

First, the model was run under the current situation (or baseline); i.e., under the projected global conditions for the next 10 years assumed for the 2017 FAPRI baseline projections. Furthermore, three plausible scenarios were simulated with all other conditions remaining the same as in the baseline. The simulated scenarios assume 10%, 20% and 30% decline in Mexican imports of U.S. cotton with respect to the 2017 baseline level. These scenarios are hypothetical as there is no indication of changes in NAFTA to date. But, we simulate these to provide indications of relative potential changes should NAFTA be abandoned or significant tariffs reinstated. The projected outcomes of all three scenarios above were compared with the baseline scenario to determine the economic impacts on US and Mexico cotton markets. The impacts of trade changes on cotton production, consumption and trade for the U.S. and Mexico were estimated by comparing baseline projections to their respective quantities for each individual scenario.

Estimation Results

Results are reported as percentage annual changes over the period 2017/18 – 2027/28 in terms of changes from baseline estimates. Tables 1 and 2 present the results of cotton production, consumption and trade of the baseline and three scenarios for the U.S. and Mexico, respectively.

As expected, declining Mexican cotton imports will have negative impacts on the U.S. cotton farm prices. Compared to the projected baseline, simulation results showed that a 10%, 20% and 30% reduction in Mexican cotton imports

led to average price drops in the U.S. cotton price (bottom of Table 1) by -0.4%, -0.8% and -1.3%, respectively, in 2018/19, then continued to decline at an average slower rate of -0.2%, -0.3% and -0.5% per year through 2027/28. As a result of declining cotton prices, the U.S. cotton production was estimated to experience a downward trend through the projection period, but the magnitudes were negligible (all less than 0.1%, on average). Consequently, the U.S. mill consumption was projected to drop slightly by an average of -0.2%, -0.3% and -0.5%, respectively, for each of the scenarios above. Over the same time period the effects of declining Mexican cotton imports on the U.S. cotton ending stocks were negligible (all less than 0.1%, on average). The U.S. cotton exports were adversely affected by the decreased Mexican imports in 2018/19, but were adjusting to the impacts by switching to expanding exports to other emerging markets such as Bangladesh, Indonesia and Vietnam. As a result, the U.S. cotton exports showed a modest increasing trend over the projection period, at a rate less than 0.1%, on average, in all three scenarios above.

Mexico is a major textile producer, which grew substantially as Mexico's textile industry has gained access to the U.S. market since NAFTA. With declining imports of U.S. cotton, it is expected to have the largest impact on the Mexican mill consumption. Simulation results showed that a 10% decrease in imports of U.S. cotton would result in an average 4.7% reduction in Mexican cotton consumption (Table 2). Similarly, the simulations of a 20% and 30% decrease in imports were estimated to cause an average of -9.3% and -13.9% reduction in mill use, respectively, with respect to the projected baseline. However, the decline in Mexican cotton imports will only have minor impacts on Mexican cotton production and ending stocks (all less than 0.1%, on average).

Table 1. Estimated effects of declining Mexican cotton imports on the U.S. cotton market.

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Average
Production	1,000 bales											
Baseline	20298.49	18585.76	18132.60	17862.99	18034.15	18286.16	18534.24	18768.04	18918.89	19207.79	19685.28	18755.85
10% Lower	20298.49	18585.76	18129.86	17860.77	18032.36	18284.43	18532.71	18766.54	18917.57	19205.87	19682.61	18754.27
% change	0.00%	0.00%	-0.02%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%
20% Lower	20298.49	18585.76	18127.09	17858.55	18030.59	18282.66	18531.18	18765.03	18916.29	19203.96	19679.91	18752.68
% change	0.00%	0.00%	-0.03%	-0.02%	-0.02%	-0.02%	-0.02%	-0.02%	-0.01%	-0.02%	-0.03%	-0.02%
30% Lower	20298.49	18585.76	18124.34	17856.31	18028.82	18280.94	18529.65	18763.52	18914.98	19202.16	19677.29	18751.11
% change	0.00%	0.00%	-0.05%	-0.04%	-0.03%	-0.03%	-0.02%	-0.02%	-0.02%	-0.03%	-0.04%	-0.03%
Consumption	3381.73	3430.61	3527.81	3676.71	3742.49	3769.80	3784.06	3834.31	3883.02	3889.61	3926.55	3713.34
10% Lower	3381.73	3425.81	3522.03	3669.90	3735.72	3762.61	3778.21	3828.73	3875.42	3882.25	3919.91	3707.48
% change	0.00%	-0.14%	-0.16%	-0.19%	-0.18%	-0.19%	-0.15%	-0.15%	-0.20%	-0.19%	-0.17%	-0.16%
20% Lower	3381.73	3421.02	3516.29	3663.20	3728.87	3755.37	3772.34	3823.23	3867.86	3874.88	3913.28	3701.64
% change	0.00%	-0.28%	-0.33%	-0.37%	-0.36%	-0.38%	-0.31%	-0.29%	-0.39%	-0.38%	-0.34%	-0.31%
30% Lower	3381.73	3416.33	3510.57	3656.53	3722.16	3748.18	3766.48	3817.68	3860.38	3867.64	3906.64	3695.85
% change	0.00%	-0.42%	-0.49%	-0.55%	-0.54%	-0.57%	-0.46%	-0.43%	-0.58%	-0.56%	-0.51%	-0.47%
Ending Stock	5545.18	5832.57	5865.30	6270.47	6312.60	6335.59	6433.86	6593.33	6593.48	6702.30	6804.06	6298.98
10% Lower	5545.18	5838.48	5869.55	6273.90	6315.76	6338.22	6436.37	6595.43	6594.20	6703.00	6805.25	6301.39
% change	0.00%	0.10%	0.07%	0.05%	0.05%	0.04%	0.04%	0.03%	0.01%	0.01%	0.02%	0.04%
20% Lower	5545.18	5844.44	5873.80	6277.28	6319.00	6340.86	6438.89	6597.45	6594.92	6703.72	6806.44	6303.82
% change	0.00%	0.20%	0.14%	0.11%	0.10%	0.08%	0.08%	0.06%	0.02%	0.02%	0.03%	0.08%
30% Lower	5545.18	5850.38	5878.09	6280.66	6322.16	6343.49	6441.41	6599.52	6595.60	6704.41	6807.67	6306.23
% change	0.00%	0.31%	0.22%	0.16%	0.15%	0.12%	0.12%	0.09%	0.03%	0.03%	0.05%	0.12%
Exports	14181.58	14867.78	14572.07	13781.11	14249.53	14493.37	14651.91	14774.27	15035.72	15209.36	15656.97	14679.42
10% Lower	14181.58	14866.68	14576.76	13786.52	14254.78	14499.36	14656.35	14778.76	15043.37	15214.82	15660.45	14683.58
% change	0.00%	-0.01%	0.03%	0.04%	0.04%	0.04%	0.03%	0.03%	0.05%	0.04%	0.02%	0.03%
20% Lower	14181.58	14865.50	14581.44	13791.87	14260.01	14505.43	14660.81	14783.23	15050.96	15220.28	15663.90	14687.73
% change	0.00%	-0.02%	0.06%	0.08%	0.07%	0.08%	0.06%	0.06%	0.10%	0.07%	0.04%	0.06%
30% Lower	14181.58	14864.26	14586.06	13797.22	14265.17	14511.42	14665.25	14787.73	15058.51	15225.71	15667.39	14691.84
% change	0.00%	-0.02%	0.10%	0.12%	0.11%	0.12%	0.09%	0.09%	0.15%	0.11%	0.07%	0.08%

Price	U.S. Cents/lb											
Baseline	61.48	62.32	62.68	63.13	63.53	64.33	65.02	65.50	66.30	67.15	67.61	64.46
10% Lower	61.48	62.06	62.51	62.99	63.39	64.22	64.91	65.40	66.28	67.11	67.55	64.35
% change	0.00%	-0.42%	-0.27%	-0.22%	-0.21%	-0.18%	-0.18%	-0.15%	-0.04%	-0.05%	-0.09%	-0.16%
20% Lower	61.48	61.80	62.35	62.85	63.25	64.10	64.79	65.31	66.25	67.08	67.49	64.25
% change	0.00%	-0.84%	-0.53%	-0.44%	-0.43%	-0.36%	-0.35%	-0.29%	-0.08%	-0.10%	-0.17%	-0.33%
30% Lower	61.48	61.53	62.18	62.71	63.12	63.99	64.68	65.21	66.22	67.05	67.43	64.14
% change	0.00%	-1.27%	-0.80%	-0.66%	-0.65%	-0.53%	-0.53%	-0.43%	-0.12%	-0.15%	-0.26%	-0.49%

Table 2. Estimated Effects of Declining Mexican Cotton Imports on the Mexican Cotton Market.

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Average
Production	1,000 bales											
Baseline	1385.68	1185.87	1146.33	1158.40	1165.64	1169.97	1172.51	1174.19	1175.31	1182.72	1192.51	1191.74
10% Lower	1385.68	1185.86	1146.28	1158.32	1165.53	1169.83	1172.35	1174.02	1175.13	1182.55	1192.35	1191.63
% change	0.00%	0.00%	0.00%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%
20% Lower	1385.68	1185.86	1146.23	1158.24	1165.42	1169.69	1172.20	1173.85	1174.95	1182.39	1192.19	1191.52
% change	0.00%	0.00%	-0.01%	-0.01%	-0.02%	-0.02%	-0.03%	-0.03%	-0.03%	-0.03%	-0.03%	-0.02%
30% Lower	1385.68	1185.86	1146.18	1158.16	1165.30	1169.55	1172.04	1173.68	1174.78	1182.22	1192.03	1191.41
% change	0.00%	0.00%	-0.01%	-0.02%	-0.03%	-0.04%	-0.04%	-0.04%	-0.04%	-0.04%	-0.04%	-0.03%
Consumption	1804.07	1819.95	1841.65	1873.74	1903.51	1944.73	1966.18	2006.13	2039.84	2092.84	2122.52	1946.83
10% Lower	1804.07	1739.53	1756.10	1781.37	1808.83	1844.98	1864.20	1899.19	1928.96	1976.90	2004.34	1855.31
% change	0.00%	-4.42%	-4.65%	-4.93%	-4.97%	-5.13%	-5.19%	-5.33%	-5.44%	-5.54%	-5.57%	-4.65%
20% Lower	1804.07	1658.79	1670.60	1689.94	1712.90	1744.56	1761.92	1793.57	1818.39	1860.59	1886.24	1763.78
% change	0.00%	-8.86%	-9.29%	-9.81%	-10.01%	-10.29%	-10.39%	-10.60%	-10.86%	-11.10%	-11.13%	-9.30%
30% Lower	1804.07	1578.88	1585.00	1598.71	1618.45	1644.57	1659.42	1686.98	1708.70	1745.80	1767.67	1672.57
% change	0.00%	-13.25%	-13.94%	-14.68%	-14.98%	-15.43%	-15.60%	-15.91%	-16.23%	-16.58%	-16.72%	-13.94%
Ending Stock	752.92	721.30	674.03	662.01	660.38	661.30	662.48	663.46	664.18	666.96	671.25	678.21
10% Lower	752.92	721.29	674.01	661.97	660.33	661.23	662.41	663.38	664.09	666.87	671.17	678.15
% change	0.00%	0.00%	0.00%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%
20% Lower	752.92	721.29	673.99	661.94	660.28	661.17	662.33	663.30	664.00	666.78	671.08	678.10
% change	0.00%	0.00%	0.00%	-0.01%	-0.02%	-0.02%	-0.02%	-0.03%	-0.03%	-0.03%	-0.02%	-0.02%
30% Lower	752.92	721.29	673.98	661.91	660.23	661.11	662.26	663.21	663.91	666.70	671.00	678.05
% change	0.00%	0.00%	-0.01%	-0.02%	-0.02%	-0.03%	-0.03%	-0.04%	-0.04%	-0.04%	-0.04%	-0.02%
Imports	932.09	812.30	861.89	919.92	955.82	1001.22	1023.51	1065.11	1103.15	1156.15	1182.55	1001.25
10% Lower	932.09	731.02	775.89	827.22	860.85	901.30	921.35	958.07	992.45	1040.35	1064.39	909.54
% change	0.00%	-10.01%	-9.98%	-10.08%	-9.94%	-9.98%	-9.98%	-10.05%	-10.03%	-10.02%	-9.99%	-10.01%
20% Lower	932.09	649.41	689.94	735.48	764.63	800.70	818.90	852.36	882.07	924.19	946.31	817.83
% change	0.00%	-20.05%	-19.95%	-20.05%	-20.00%	-20.03%	-19.99%	-19.97%	-20.04%	-20.06%	-19.98%	-20.01%
30% Lower	932.09	568.63	603.89	643.93	669.90	700.53	716.21	745.68	772.57	809.53	827.74	726.43

% change	0.00%	-30.00%	-29.93%	-30.00%	-29.91%	-30.03%	-30.02%	-29.99%	-29.97%	-29.98%	-30.00%	-29.98%
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Conclusion

The movement in the NAFTA renegotiation is still unclear. Considering that Mexico is one of the largest markets for U.S. cotton exports, any changes related to Mexican imports of U.S. cotton should have significant implications for the U.S.-Mexico cotton markets. Our simulation results indicated that declining Mexican cotton imports would put downward pressure on the U.S. cotton farm prices as expected. But, the price impacts dissipated over time and the average rates were minimal over the entire period. Moreover, decreased cotton demand from Mexico would do little to curb the total U.S. cotton exports over the projection period, largely because U.S. exports will simply be diverted to other emerging textile producing countries, such as Bangladesh and Vietnam.

References

- Rosson, Parr, Geoffrey A. Benson, Kirby S. Moulton, and Larry D. Sanders. 1999. "North American Free Trade and U.S. Agriculture." Agricultural Experiment Station and Cooperative Extension Service Kansas State University.
- USDA, Foreign Agriculture Service (FAS/USDA). Global Agricultural Trade System (GATS). Washington D.C. Available at: <https://apps.fas.usda.gov/gats/default.aspx>, last accessed October 2017.
- Zahniser, Steven, and John Link. 2002. "Effects of North American Free Trade Agreement on Agriculture and the Rural Economy."A Report from the Economic Research Service. ERS/USDA. WRS (02-01).