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UNITED STATES – CERTAIN COUNTRY OF ORIGIN LABELLING (COOL) REQUIREMENTS

RECOURSE TO ARTICLE 22.6 OF THE DSU BY THE UNITED STATES

DECISIONS BY THE ARBITRATOR

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Argentina – Footwear (EC)	Appellate Body Report, *Argentina – Safeguard Measures on Imports of Footwear*, WT/DS121/AB/R, adopted 12 January 2000, DSR 2000:I, p. 515
Brazil – Aircraft (Article 22.6 – Brazil)	Decision by the Arbitrators, *Brazil – Export Financing Programme for Aircraft – Recourse to Arbitration by Brazil under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement*, WT/DS46/ARB, 28 August 2000, DSR 2002:I, p. 19
Canada – Aircraft Credits and Guarantees (Article 22.6 – Canada)	Decision by the Arbitrator, *Canada – Export Credits and Loan Guarantees for Regional Aircraft – Recourse to Arbitration by Canada under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement*, WT/DS222/ARB, 17 February 2003, DSR 2003:III, p. 1187
EC – Asbestos	Panel Report, *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, WT/DS135/R and Add.1, adopted 5 April 2001, as modified by Appellate Body Report WT/DS135/AB/R, DSR 2001:VIII, p. 3305
EC – Bananas III (US) (Article 22.6 – EC)	Decision by the Arbitrators, *European Communities – Regime for the Importation, Sale and Distribution of Bananas – Recourse to Arbitration by the European Communities under Article 22.6 of the DSU*, WT/DS27/ARB, 9 April 1999, DSR 1999:II, p. 725
EC – Bananas III (Ecuador) (Article 22.6 – EC)	Decision by the Arbitrators, *European Communities – Regime for the Importation, Sale and Distribution of Bananas – Recourse to Arbitration by the European Communities under Article 22.6 of the DSU*, WT/DS27/ARB/ECU, 24 March 2000, DSR 2000:V, p. 2237
EC – Citrus	GATT Panel Report, *European Community – Tariff Treatment on Imports of Citrus Products from Certain Countries in the Mediterranean Region*, L/5776, 7 February 1985, unadopted
EC – Export Subsidies on Sugar	Appellate Body Report, *European Communities – Export Subsidies on Sugar*, WT/DS265/AB/R, WT/DS266/AB/R, WT/DS283/AB/R, adopted 19 May 2005, DSR 2005:XIII, p. 6365
EC – Hormones (Canada) (Article 22.6 – EC)	Decision by the Arbitrators, *European Communities – Measures Concerning Meat and Meat Products (Hormones), Original Complaint by Canada – Recourse to Arbitration by the European Communities under Article 22.6 of the DSU*, WT/DS48/ARB, 12 July 1999, DSR 1999:III, p. 1135
EC – Hormones (US) (Article 22.6 – EC)	Decision by the Arbitrators, *European Communities – Measures Concerning Meat and Meat Products (Hormones), Original Complaint by the United States – Recourse to Arbitration by the European Communities under Article 22.6 of the DSU*, WT/DS26/ARB, 12 July 1999, DSR 1999:III, p. 1105
EC – Seal Products	Appellate Body Reports, *European Communities – Measures Prohibiting the Importation and Marketing of Seal Products*, WT/DS400/AB/R / WT/DS401/AB/R, adopted 18 June 2014
EEC – Oilseeds I	GATT Panel Report, *European Economic Community – Payments and Subsidies Paid to Processors and Producers of Oilseeds and Related Animal-Feed Proteins*, L/6627, adopted 25 January 1990, BISD 37S/86
EEC – Oilseeds II	GATT Panel Report, *European Economic Community – Follow-Up on the Panel Report "Payments and Subsidies Paid to Processors and Producers of Oilseeds and Related Animal-Feed Proteins"*, DS28/R, 31 March 1992, BISD 39S/91
India – Patents (US)	Appellate Body Report, *India – Patent Protection for Pharmaceutical and Agricultural Chemical Products*, WT/DS50/AB/R, adopted 16 January 1998, DSR 1998:I, p. 9
Japan – Alcoholic Beverages II	Appellate Body Report, *Japan – Taxes on Alcoholic Beverages*, WT/DS8/AB/R, WT/DS10/AB/R, WT/DS11/AB/R, adopted 1 November 1996, DSR 1996:I, p. 97
Japan – Film	Panel Report, *Japan – Measures Affecting Consumer Photographic Film and Paper*, WT/DS44/R, adopted 22 April 1998, DSR 1998:IV, p. 1179
Korea – Dairy	Appellate Body Report, *Korea – Definitive Safeguard Measure on Imports of*

Short Title	Full Case Title and Citation
	Certain Dairy Products, WT/DS98/AB/R, adopted 12 January 2000, DSR 2000:I, p. 3
Mexico – Corn Syrup (Article 21.5 – US)	Appellate Body Report, *Mexico – Anti-Dumping Investigation of High Fructose Corn Syrup (HFCS) from the United States – Recourse to Article 21.5 of the DSU by the United States*, WT/DS132/AB/RW, adopted 21 November 2001, DSR 2001:XIII, p. 6675
US – 1916 Act	Appellate Body Report, *United States – Anti-Dumping Act of 1916*, WT/DS136/AB/R, WT/DS162/AB/R, adopted 26 September 2000, DSR 2000:X, p. 4793
US – 1916 Act (EC) (Article 22.6 – US)	Decision by the Arbitrators, *United States – Anti-Dumping Act of 1916, Original Complaint by the European Communities – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS136/ARB, 24 February 2004, DSR 2004:IX, p. 4269
US – Anti-Dumping and Countervailing Duties (China)	Appellate Body Report, *United States – Definitive Anti-Dumping and Countervailing Duties on Certain Products from China*, WT/DS379/AB/R, adopted 25 March 2011, DSR 2011:V, p. 2869
US – COOL	Appellate Body Reports, *United States – Certain Country of Origin Labelling (COOL) Requirements*, WT/DS384/AB/R / WT/DS386/AB/R, adopted 23 July 2012, DSR 2012:V, p. 2449
US – COOL	Panel Reports, *United States – Certain Country of Origin Labelling (COOL) Requirements*, WT/DS384/R / WT/DS386/R, adopted 23 July 2012, as modified by Appellate Body Reports WT/DS384/AB/R / WT/DS386/AB/R, DSR 2012:VI, p. 2745
US – COOL (Article 21.3(c))	Award of the Arbitrator, *United States – Certain Country of Origin Labelling (COOL) Requirements – Arbitration under Article 21.3(c) of the DSU*, WT/DS384/24, WT/DS386/23, 4 December 2012, DSR 2012:XIII, p. 7173
US – COOL (Article 21.5 – Canada and Mexico)	Appellate Body Reports, *United States – Certain Country of Origin Labelling (COOL) Requirements – Recourse to Article 21.5 of the DSU by Canada and Mexico*, WT/DS384/AB/RW / WT/DS386/AB/RW, adopted 29 May 2015
US – COOL (Article 21.5 – Canada and Mexico)	Panel Reports, *United States – Certain Country of Origin Labelling (COOL) Requirements – Recourse to Article 21.5 of the DSU by Canada and Mexico*, WT/DS384/RW and Add.1 / WT/DS386/RW and Add.1, adopted 29 May 2015, as modified by Appellate Body Reports WT/DS384/AB/RW / WT/DS386/AB/RW
US – FSC (Article 22.6 – US)	Decision by the Arbitrator, *United States – Tax Treatment for "Foreign Sales Corporations" – Recourse to Arbitration by the United States under Article 22.6 of the DSU and Article 4.11 of the SCM Agreement*, WT/DS108/ARB, 30 August 2002, DSR 2002:VI, p. 2517
US – Gambling (Article 22.6 – US)	Decision by the Arbitrator, *United States – Measures Affecting the Cross-Border Supply of Gambling and Betting Services – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS285/ARB, 21 December 2007, DSR 2007:X, p. 4163
US – Gasoline	Appellate Body Report, *United States – Standards for Reformulated and Conventional Gasoline*, WT/DS2/AB/R, adopted 20 May 1996, DSR 1996:I, p. 3
US – Large Civil Aircraft (2nd complaint)	Appellate Body Report, *United States – Measures Affecting Trade in Large Civil Aircraft (Second Complaint)*, WT/DS353/AB/R, adopted 23 March 2012, DSR 2012:I, p. 7
US – Offset Act (Byrd Amendment) (Brazil) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by Brazil – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS217/ARB/BRA, 31 August 2004, DSR 2004:IX, p. 4341
US – Offset Act (Byrd Amendment) (Canada) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by Canada – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS234/ARB/CAN, 31 August 2004, DSR 2004:IX, p. 4425
US – Offset Act (Byrd Amendment) (Chile) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by Chile – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS217/ARB/CHL, 31 August 2004, DSR 2004:IX, p. 4511

Short Title	Full Case Title and Citation
US – Offset Act (Byrd Amendment) (EC) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by the European Communities – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS217/ARB/EEC, 31 August 2004, DSR 2004:IX, p. 4591
US – Offset Act (Byrd Amendment) (India) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by India – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS217/ARB/IND, 31 August 2004, DSR 2004:X, p. 4691
US – Offset Act (Byrd Amendment) (Japan) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by Japan – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS217/ARB/JPN, 31 August 2004, DSR 2004:X, p. 4771
US – Offset Act (Byrd Amendment) (Korea) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by Korea – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS217/ARB/KOR, 31 August 2004, DSR 2004:X, p. 4851
US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)	Decision by the Arbitrator, *United States – Continued Dumping and Subsidy Offset Act of 2000, Original Complaint by Mexico – Recourse to Arbitration by the United States under Article 22.6 of the DSU*, WT/DS234/ARB/MEX, 31 August 2004, DSR 2004:X, p. 4931
US – Section 110(5) Copyright Act (Article 25)	Award of the Arbitrators, *United States – Section 110(5) of the US Copyright Act – Recourse to Arbitration under Article 25 of the DSU*, WT/DS160/ARB25/1, 9 November 2001, DSR 2001:II, p. 667
US – Upland Cotton	Appellate Body Report, *United States – Subsidies on Upland Cotton*, WT/DS267/AB/R, adopted 21 March 2005, DSR 2005:I, p. 3
US – Upland Cotton (Article 22.6 – US II)	Decision by the Arbitrator, *United States – Subsidies on Upland Cotton – Recourse to Arbitration by the United States under Article 22.6 of the DSU and Article 7.10 of the SCM Agreement*, WT/DS267/ARB/2 and Corr.1, 31 August 2009, DSR 2009:IX, p. 4083

ABBREVIATIONS USED IN THESE DECISIONS

Abbreviation	Description
2002 Farm Bill	Farm Security and Rural Investment Act of 2002, Public Law No. 107-171, Section 10816, 116 Stat. 134
2008 Farm Bill	Food, Conservation, and Energy Act of 2008, Public Law No. 110-234, Section 11002, 122 Stat. 923
2009 Final Rule	Final Rule on Mandatory Country of Origin Labeling of Beef, Pork, Lamb, Chicken, Goat Meat, Wild and Farm-Raised Fish and Shellfish, Perishable Agricultural Commodities, Peanuts, Pecans, Ginseng, and Macadamia Nuts, *United States Federal Register*, Vol. 74, No. 10 (15 January 2009), pp. 2658-2707
2013 Final Rule	Final Rule on Mandatory Country of Origin Labeling of Beef, Pork, Lamb, Chicken, Goat Meat, Wild and Farm-Raised Fish and Shellfish, Perishable Agricultural Commodities, Peanuts, Pecans, Ginseng, and Macadamia Nuts, *United States Federal Register*, Vol. 78, No. 101 (24 May 2013), pp. 31367-31385
amended COOL measure	COOL statute together with the 2009 Final Rule, as amended by the 2013 Final Rule
AMS	Agricultural Marketing Service of the USDA
BCI	business confidential information
compliance panel	panel in the Article 21.5 compliance proceedings in *US – COOL*
COOL	country of origin labelling
COOL statute	Agricultural Marketing Act of 1946, 60 Stat. 1087, *United States Code*, Title 7, Section 1621 et seq., as amended by the 2002 Farm Bill and the 2008 Farm Bill
DSB	Dispute Settlement Body
DSU	Understanding on Rules and Procedures Governing the Settlement of Disputes
GATS	General Agreement on Trade in Services
GATT 1994	General Agreement on Tariffs and Trade 1994
original COOL measure	COOL statute together with the 2009 Final Rule
original panel	panel in the original proceedings in *US – COOL*
TBT Agreement	Agreement on Technical Barriers to Trade
USDA	United States Department of Agriculture
Working Procedures	Working Procedures of the Arbitrator
WTO	World Trade Organization
WTO Agreement	Marrakesh Agreement Establishing the World Trade Organization

EXHIBITS CITED IN THESE DECISIONS

Exhibit No.	Title
CAN-7	BCI
CAN-8	BCI
CAN-19	BCI
CAN-35	Weekly cattle data for econometrics
CAN-36	Weekly pig data for econometrics
CAN-52	BCI
CAN-55 (and MEX-9)	Informa Economics, *Update of Cost Assessments for Country of Origin Labeling – Beef & Pork (2009)* (June 2010)
CAN-68	Weekly cattle data used for regressions with variables
CAN-69	Weekly hog data used for regressions with variables
CAN-82	Feeder Pigs Monthly Import Data
CAN-86	K. Grier, "Livestock Price Discovery In Canada", (George Morris Centre, October 2010)
CAN-89	US and Canada Weekly Hog Prices
CAN-90	Agricultural Marketing Guide: Alberta Agriculture and Forestry, "Economics and Marketing: Predicting Feeder Cattle Prices"
CAN-91	US and Canada Weekly Cattle Prices
CAN-95	BCI
MEX-2, Appendix 1	Weekly Texas and New Mexico Feeder Cattle Prices
MEX-2, Appendix 2	Price of Mexican Feeder Cattle Exported to the United States
MEX-2, Appendix 8	J. M. Marsh, "Impacts of Declining U.S. Retail Beef Demand on Farm-Level Beef Prices and Production", *American Journal of Agricultural Economics*, Vol. 85 (November 2003)
MEX-2, Appendix 10	D. Peel et al., "Cow-Calf Beef Production in Mexico", *Report from the Economic Research Service (USDA)*, LDP-M-196-01 (November 2010)
MEX-2, Appendix 11	D. Peel et al., "Trade, the Expanding Mexican Beef Industry, and Feedlot and Stocker Cattle Production in Mexico", *Report from the Economic Research Service (USDA)*, LDP-M-206-01 (August 2011)
MEX-2, Appendix 12	D. Pendell et al., "AJAE Appendix: Animal Identification and Tracing in the United States", *American Journal of Agricultural Economics*, Vol. 92 (5 March 2010)
MEX-2, Appendix 15	USDA Office of the Chief Economist, Report to Congress, "Economic Analysis of Country of Origin Labeling (COOL)" (April 2015)
MEX-2, Appendix A to Appendix 15	G. Tonsor, T. Schroder, and J. Parcell, *Economic Impacts of 2009 and 2013 U.S. Country-of-Origin Labeling Rules on U.S. Beef and Pork Markets,* Project Number AG-3142-P-14-0054 R0, Final Report submitted to the USDA Office of the Chief Economist, (26 January 2015)
MEX-26	Statement of Confederación Nacional de Organizaciones Ganaderas of 14 September 2015
MEX-27	USDA Market News, AL_LS626 (3 October 2014)
MEX-31	J. Vercammen, *Agricultural Marketing: Structural Models for Price Analysis* (Routledge, 2011)
MEX-32	F. Adcock et al., "The Global Competitiveness of the North American Livestock Industry", *Choices*, Vol 21(3) (2006)
MEX-33	R. Clemens, "Integration in the North American Livestock and Meat Industries", *Iowa Ag Review*, Vol. 9 (Summer 2003)
MEX-34	W. Hahn et al., "Market Integration of the North American Animal Products Complex", *Report from the Economic Research Service (USDA)*, LDP-M-131-01 (May 2005)
MEX-35	R. Jurenas, "Country-of-Origin-Labeling for Foods", *Congressional Research Service*, (15 July 2010)
MEX-36	BCI
MEX-37	Comparison of invoices for Mexican cattle sold through direct sales to AMS

Exhibit No.	Title
MEX-44	Statement of Confederación Nacional de Organizaciones Ganaderas of 30 September 2015
MEX-46	Satellite map of border crossing at Santa Teresa, New Mexico
MEX-48	US Tax Court, T.C. Memo. 2000-357 (16 November 16 2000)
USA-3	COOL EDM worksheet with data, parameters, and equations
USA-4	Guide to the COOL EDM
USA-30	Wohlgenant, "Market Modeling of the Effects of Adoption of New Swine Waste Management Technologies in North Carolina" (July 2005)
USA-35	S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014)
USA-51	Market Share Data
USA-53	Sample Economic Revisions to Canada's Feeder Cattle Quantity Estimates
USA-59	Brester et al., "Evaluating the Impacts of the U.S. Department of Commerce's Preliminary Imposition of Tariffs on U.S. Imports of Canadian Live Cattle", Research Discussion Paper No. 34 (August 1999)
USA-61	Sample Econometric Analysis and Data
USA-76	National Pork Board, "An Economic Analysis of the Effectiveness of the Pork Checkoff Program", Final Report (February 2007)
USA-80	S.A. Hamilton, "The location of the North American cattle-feeding industry: a nonspatial modelling approach", *Iowa State University Retrospective Theses and Dissertations* (1991)

1 INTRODUCTION

1.1 Initial proceedings

1.1. The present arbitration proceedings arise in the disputes initiated by Canada and Mexico concerning the United States' country of origin labelling (COOL) requirements for meat products.

1.2. On 23 July 2012, the DSB adopted the original Appellate Body reports in these disputes, and the reports of the original panel as modified by the Appellate Body.[1] The findings adopted by the DSB were that the COOL measure at issue in the original proceedings (the original COOL measure[2]) was inconsistent with Article 2.1 of the TBT Agreement because it accorded less favourable treatment to imported livestock than to like domestic livestock.[3]

1.3. On 4 December 2012, following referral to arbitration under Article 21.3(c) of the DSU, an arbitrator determined that the reasonable period of time for the United States to implement the DSB's recommendations and rulings would expire on 23 May 2013.[4] At the DSB meeting on 24 May 2013, the United States announced that, in order to come into compliance with the DSB's recommendations and rulings, the United States "had issued a final rule that made certain changes to the country-of-origin (COOL) labelling requirements", and that these actions "brought the United States into compliance" with those recommendations and rulings.[5]

1.4. On 19 August 2013, Canada and Mexico requested the establishment of a panel under Article 21.5 of the DSU, to determine whether the "amended COOL measure"[6] brought the United States into compliance.[7] On 29 May 2015, the DSB adopted the Article 21.5 Appellate Body reports in these disputes, and the reports of the compliance panel as modified by the Appellate Body.[8] The findings adopted by the DSB were that the amended COOL measure violated Article 2.1 of the TBT Agreement and Article III:4 of the GATT 1994 because it continued to accord less favourable treatment to imported livestock than to like domestic livestock.[9]

1.5. On 4 June 2015, Canada filed a request with the DSB for authorization to suspend concessions or other obligations under Article 22.2 of the DSU.[10] In its request, Canada sought authorization to suspend concessions and related obligations in the goods sector under the GATT 1994 to an annual value of CAD 3.068 billion.[11]

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[1] WT/DSB/M/320, Item 6 of the Agenda, para. 110.

[2] The "original COOL measure" comprised the COOL statute together with the 2009 Final Rule. See Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 7.7-7.9. The statutory provisions of the COOL measure were introduced in the US Congress through the Farm Security and Rural investment Act of 2002, Public Law No. 107-171, section 10816, 116 Stat. 134, 533-535 (the 2002 Farm Bill), which was subsequently amended by the Food, Conservation, and Energy Act of 2008, Public law No. 110-234, section 11002, 122 Stat. 923, 1351-1354 (the 2008 Farm Bill). Both Farm Bills subsequently became part of the Agricultural Marketing Act of 1946, codified as United States Code, Title 7, section 1621 et seq. The COOL requirements are contained in section 1638 of Title 7. The 2009 Final Rule is titled the Final Rule on Mandatory Country of Origin Labeling of Beef, Pork, Lamb, Chicken, Goat Meat, Wild and Farm-Raised Fish and Shellfish, Perishable Agricultural Commodities, Peanuts, Pecans, Ginseng, and Macadamia Nuts, published in United States Federal Register, Vol. 74, No. 10 (15 January 2009), pp. 2658-2707, codified as United States Code of Federal Regulations, Title 7, Part 65—Country of Origin Labeling of Beef, Pork, Lamb, Chicken, Goat Meat, Perishable Agricultural Commodities, Macadamia Nuts, Pecans, Peanuts, and Ginseng.

[3] Panel Reports, *US – COOL*, para. 8.3; Appellate Body Reports, *US – COOL*, para. 496(a).

[4] Award of the Arbitrator, *US – COOL (Article 21.3(c))*, para. 123.

[5] WT/DSB/M/332, Item 11 of the Agenda, para. 11.1.

[6] The "amended COOL measure" comprised the original COOL measure as amended by the 2013 Final Rule issued by the Agricultural Marketing Service (AMS) of the US Department of Agriculture (USDA). The 2013 Final Rule is titled the Final Rule on Mandatory Country of Origin Labeling of Beef, Pork, Lamb, Chicken, Goat Meat, Wild and Farm-Raised Fish and Shellfish, Perishable Agricultural Commodities, Peanuts, Pecans, Ginseng, and Macadamia Nuts (7 CFR Parts 60 and 65), 78 Fed. Reg. 31367-31385 (24 May 2013). See also Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 7.8-7.9.

[7] WT/DS384/26 and WT/DS386/25.

[8] WT/DSB/M/362.

[9] Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 8.3 and 8.4; Appellate Body Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 6.2 and 6.4.

[10] WT/DS384/35.

[11] WT/DS384/35.

1.6. On 4 June 2015, Mexico filed a request for authorization to suspend concessions or other obligations under Article 22.2 of the DSU.[12] In this initial request, Mexico sought authorization to suspend concessions and related obligations in the goods sector under the GATT 1994 in an annual amount of USD 653.5 million.[13] On 12 June 2015, Mexico filed a corrigendum, correcting the amount to USD 713 million.[14] On 17 June 2015, Mexico re-submitted the request for authorization to suspend concessions or other obligations in the amount of USD 713 million.[15]

1.2 Request for arbitration and arbitration proceedings

1.7. On 16 June 2015, the United States communicated to the DSB its objection to Canada's proposed level of suspension of concessions or other obligations.[16] At its meeting of 17 June 2015, the DSB took note that the matter raised by the United States had been referred to arbitration, as required by Article 22.6 of the DSU.[17]

1.8. On 22 June 2015, the United States communicated to the DSB its objection to Mexico's proposed level of suspension of concessions or other obligations.[18] As noted in document WT/DS386/37, the parties agreed that the matter had been referred to arbitration under Article 22.6 of the DSU.[19]

1.9. The arbitration was undertaken by the original panelists, namely:

Chairperson:	Mr Christian Häberli
Members:	Mr Manzoor Ahmad
	Mr João Magalhães

1.10. A joint organizational meeting was held on 3 July 2015 to discuss procedural aspects of the proceedings. At this meeting, all parties agreed that the proceedings with respect to Mexico and Canada should be conducted together rather than separately. Furthermore, as discussed below in section 2.2, Mexico and Canada requested third-party status in order to be able to fully participate in each other's arbitration; the United States, while raising systemic concerns in respect of third-party rights in Article 22.6 arbitration proceedings, stated its support for full participation of Canada and Mexico in each other's arbitration.

1.11. Additionally, the United States and Canada requested that the substantive meeting be conducted as an open hearing, by which public viewing of the hearing would be permitted. Mexico raised no objection to holding an open hearing.

1.12. Finally, the United States and Canada requested that working procedures be adopted for the protection of Business Confidential Information (BCI), and Mexico agreed to the inclusion of BCI working procedures.

1.13. Taking these considerations into account, and in order to accommodate the interconnected nature of the respective disputes, the Arbitrator: (a) adopted a harmonized timetable; (b) decided to hold a joint substantive meeting with the parties; (c) granted Mexico and Canada certain rights to participate in each other's proceedings, as further discussed below in section 2.2; and (d) decided to include the two decisions in one single document with the final sections containing the Conclusion and Decision being printed on separate pages with the appropriate document symbol relevant for each dispute. Furthermore, the Arbitrator granted the parties' request for an open hearing as well as the request to protect BCI. The Arbitrator accordingly adopted Working Procedures of the Arbitrator, BCI Working Procedures, Procedures for an Open Substantive

[12] WT/DS386/34.
[13] WT/DS386/34.
[14] WT/DS386/34/Corr.1.
[15] WT/DS386/35.
[16] WT/DS384/36.
[17] WT/DS384/37.
[18] WT/DS386/37.
[19] WT/DS386/37. See also section 2.1 below.

Meeting of the Arbitrator, and the finalized timetable, and communicated those documents to the parties on 6 July 2015.

1.14. In accordance with the timetable and Working Procedures adopted by the Arbitrator, on 10 July 2015, Canada and Mexico presented communications concerning the methodology for calculating the proposed level of suspension (methodology papers). Due to a corrigendum submitted by Canada one working day later in connection with its methodology paper, the United States was granted one additional working day to file its written submission in DS384. The United States provided its written submissions on 29 July and 30 July 2015, with regard to Mexico's and Canada's methodology papers respectively. Canada and Mexico provided written submissions to the Arbitrator on 12 August 2015. The Arbitrator sent written questions to the parties on 21 August 2015, to which the parties provided written responses on 1 September 2015. The Arbitrator held its substantive meeting with the parties on 15 and 16 September 2015. The parties provided written responses to an additional set of questions from the Arbitrator on 1 October 2015, and submitted comments on each other's responses to those questions on 8 October 2015.

1.15. This Decision is structured as follows: we first address two procedural issues in section 2. We then turn to the substance of the proceedings and start by providing a brief overview of the parties' main arguments in section 3. Following this, we set out a number of preliminary issues in section 4 before undertaking the assessment of the proposed levels of suspension in section 5. Section 6 sets out our own determination of the level of nullification or impairment. Our conclusion and decision on the level of suspension of concessions or other obligations is contained in section 7.

2 PROCEDURAL ISSUES

2.1 Whether the objection to Mexico's request was properly referred to arbitration

2.1. As noted above, on 4 June 2015, Mexico filed a request for authorization to suspend concessions or other obligations under Article 22.2 of the DSU.[20] In that request, Mexico sought authorization to suspend concessions and other related obligations in the goods sector under the GATT 1994 in an annual amount of USD 653.5 million.[21] It also requested that a special meeting of the DSB be held on 17 June 2015 to consider its request. On 12 June 2015, Mexico submitted a corrigendum, circulated on 15 June 2015, correcting the amount to USD 713 million annually.[22]

2.2. At the outset of the DSB meeting held on 17 June 2015, prior to the adoption of the agenda, Mexico asked that the item related to its request under Article 22.2 be removed from the agenda of that meeting in light of the corrigendum it had filed on 12 June 2015 and in order that the 10-day advance notice for circulation of documents be preserved.[23] On 17 June 2015, Mexico re-submitted the request for authorization to suspend concessions or other obligations in the amount of USD 713 million annually, requesting that a special meeting of the DSB be held on 29 June 2015 to consider its request.[24] On 22 June 2015, the United States notified to the DSB its objection to Mexico's proposed level of suspension and stated that "[a]ccordingly … the matter has been referred to arbitration".[25] Thereafter, Mexico cancelled its request for a DSB meeting.[26] On 26 June 2015, the Secretariat circulated a note indicating that "the parties agree that the matter has been referred to arbitration under Article 22.6 of the DSU", and noting the composition of the Arbitrator.[27]

2.3. On 9 July 2015, the European Union communicated to the DSB its views regarding the communication from the United States circulated on 23 June 2015 "concerning certain recent procedural developments", and notably the reference in the United States' communication that Mexico's Article 22.2 request to the DSB "has been referred to arbitration, even though the DSB

[20] WT/DS386/34.
[21] WT/DS386/34.
[22] WT/DS386/34/Corr.1
[23] WT/DSB/M/363.
[24] WT/DS386/35.
[25] WT/DS386/36.
[26] Letter of 22 June 2015 from Mexico to the Chairperson of the DSB.
[27] WT/DS386/37.

meeting originally scheduled to make the referral on 29 June 2015 was cancelled".[28] In that communication, and subsequently in the DSB meeting on 20 July 2015, the European Union stated that it "does not agree that an Article 22.6 DSU request to the DSB may be referred to arbitration other than by the DSB."

2.4. According to the European Union, the phrase "shall be referred" in Article 22.6 means that "there is an actor that does the referring and that actor is the DSB".[29] In other words, it is the DSB that refers the matter to arbitration and the matter is not referred automatically when a notice of objection to a proposed level of suspension is filed.

2.5. The European Union considered that the use of similar language in other provisions in the DSU, such as "shall be established" in Article 6 and "shall be adopted" in Articles 16.4 and 17.4, support its position, because in those cases the DSB is the actor that carries out those functions. The European Union also drew attention to the multiple references to the DSB in Article 22.6 (including that it is the DSB that grants authorization to suspend concessions). For the European Union, "this context strongly supports the view that it is also *the* DSB that refers the matter to arbitration."[30] Finally, the European Union raised a number of "good reasons" for its view that the DSB must refer matters to arbitration, arguing that this view ensures that: (1) authority for binding dispute settlement "flows from the Members acting together, through the DSB"; (2) Members are informed in a timely manner of the scope and nature of the arbitration; (3) Members have an opportunity to express their views on the arbitration; and (4) Members have an opportunity to consider whether to seek to participate in the proceedings.[31]

2.6. The European Union is not a party to these proceedings, and no party to the arbitration has raised any objection in respect of the referral of this matter to arbitration. Indeed, as noted above, the parties agree that the matter has been referred to arbitration. Nevertheless, there are instances in which an adjudicator remains under a duty to investigate issues that are not raised by parties to the dispute, particularly regarding issues of a fundamental nature related to its authority to preside over the proceedings. The Appellate Body explained in *Mexico – Corn Syrup (Article 21.5)* that:

> [A] panel comes under a duty to address issues in at least two instances. First, as a matter of due process, and the proper exercise of the judicial function, panels are required to address issues that are put before them by the parties to a dispute. Second, panels have to address and dispose of certain issues of a fundamental nature, even if the parties to the dispute remain silent on those issues. In this regard, we have previously observed that '[t]he vesting of jurisdiction in a panel is a fundamental prerequisite for lawful panel proceedings.' For this reason, panels cannot simply ignore issues which go to the root of their jurisdiction – that is, to their authority to deal with and dispose of matters. Rather, panels must deal with such issues – if necessary, on their own motion – in order to satisfy themselves that they have authority to proceed.[32]

2.7. Thus, there is a legal duty on panels to seize themselves of questions that are of a "fundamental nature", including the vesting of jurisdiction. We believe that this duty also applies to arbitrators. We recall in this context that in *US – Section 110(5) Copyright Act (Article 25),* the arbitrator considered that the principle by which an international tribunal is entitled to consider its own jurisdiction applies equally to arbitration bodies as it does to panels, and thus proceeded to examine on its own motion the question whether it had "the necessary jurisdiction".[33]

2.8. On 15 July 2015, the Arbitrator communicated to the parties – namely Mexico and the United States – that it was considering whether any issues of a fundamental nature were present, particularly those that may go to the root of the Arbitrator's jurisdiction, in the context of the

[28] WT/DS386/38.
[29] WT/DS386/38.
[30] WT/DS386/38. (emphasis in original)
[31] WT/DS386/38 and WT/DSB/M/365, Item 6, para. 6.2.
[32] Appellate Body Report, *Mexico – Corn Syrup (Article 21.5 – US)*, para. 36 (quoting Appellate Body Report, *United States – 1916 Act*, para. 54).
[33] Award of the Arbitrators, *US – Section 110(5) Copyright Act (Article 25)*, para. 2.1.

arbitration in DS386. The Arbitrator invited the parties to that dispute to provide their views on the issue.[34]

2.9. In response to the Arbitrator's invitation, Mexico and the United States submitted a joint communication on behalf of both parties to the dispute.[35] In the joint communication, Mexico and the United States stated that they did not see any fundamental issues that would require the Arbitrator to take action, and emphasized that both Mexico and the United States agreed that "the matter at issue was referred to arbitration by virtue of the filing by the United States of its objection to Mexico's request."[36] Mexico and the United States noted that Members were fully informed about the arbitration through the request for authorization to suspend concessions[37], the United States' objection to that request[38], and the notification of the constitution of the Arbitrator.[39] Mexico and the United States raised various considerations regarding the interpretation of Article 22.6, including: previous occasions in which matters had been referred to arbitration under Article 22.6 without any DSB action[40]; the text of Article 22.6[41]; the text of Articles 6.1, 16.4, 17.14, and 22.7 of the DSU, which refer to "shall be"[42]; the applicable positive and negative decision-making rules under the DSU[43]; the authority and functions of the DSB[44]; procedures and provisions with respect to other arbitrations provided for under the DSU[45]; and procedural and timing implications.[46]

2.10. Turning to our assessment of the issue, we begin with the text of Article 22.6, which states in relevant part:

> When the situation described in paragraph 2 occurs, the DSB, upon request, shall grant authorization to suspend concessions or other obligations within 30 days of the expiry of the reasonable period of time unless the DSB decides by consensus to reject the request. However, if the Member concerned objects to the level of suspension proposed … the matter shall be referred to arbitration.

2.11. The question whether the DSB must take specific action when an objection to a proposed level of suspension is notified in order to effect a referral to arbitration, or whether the objection itself has this effect, is a contentious issue among Members.[47] We note that Article 22.6 provides in mandatory language that the matter "shall be referred" if the Member concerned objects to the level of suspension proposed. However, in using passive language without identification of the actor, Article 22.6 does not provide clear guidance on how this occurs. As noted by the parties and the European Union, similar passive language for actions that "shall be" carried out is used throughout the DSU, and the actor to whom such language refers differs based on the terms and context of the provision in question. For instance, the provision in Article 6 of the DSU that panels "shall be established" explicitly provides for this to be done at a DSB meeting, further stipulating that the DSB may decide by consensus not to establish a panel. No such explicit language is evident in the second sentence of Article 22.6 with respect to the referral of arbitration.

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[34] In accordance with paragraph 5 of the Working Procedures adopted by the Arbitrator, Canada was copied on this communication. Canada submitted its own unsolicited comments on 31 July 2015. We note, however, that Canada's participatory rights under Paragraph 5 of the Working Procedures do not allow it to comment on issues not pertaining to its own case.

[35] Communication from Mexico and the United States to the Arbitrator, 31 July 2015.

[36] Communication from Mexico and the United States to the Arbitrator, 31 July 2015.

[37] WT/DS386/35.

[38] WT/DS386/36.

[39] WT/DS386/37.

[40] Communication from Mexico and the United States to the Arbitrator, 31 July 2015, Annex - Joint Communication Regarding the Proper Interpretation of Article 22.6 of the DSU Regarding the Referral of a Request to Arbitration, para. 2.

[41] Ibid. paras. 3-4, 7-9, and 19.

[42] Ibid. paras. 12-16.

[43] Ibid. paras. 5-6 and 9.

[44] Ibid. paras. 17-18.

[45] Ibid. para. 18.

[46] Ibid. paras. 19-20.

[47] In this connection, we note the divergent opinions of the Members on this issue raised at the DSB meeting of 20 July 2015. WT/DSB/M/365, Item 6 of the Agenda, paras. 6.1-6.21. This issue has not arisen in prior arbitration proceedings.

2.12. Although the terms of Article 22.6 do not prescribe the manner of referral, there are contextual indications within the DSU suggesting that referral to arbitration need not be performed by the DSB. For example, a number of provisions of the DSU explicitly provide for arbitration proceedings in contrast to panel proceedings. "Arbitration" is contemplated under Article 21.3(c), Article 25, and Article 22.6. In arbitrations under Article 21.3(c) and Article 25, there is no explicit requirement of any action by the DSB to initiate the arbitration. Rather, Article 21.3(c) provides that the reasonable period of time for compliance "shall be … a period of time determined through binding arbitration", without further specification of the procedure or forum through which such arbitration is initiated. With respect to arbitration under Article 25, the DSU provides that "resort to arbitration shall be subject to mutual agreement of the parties" and that "[a]greements to resort to arbitration shall be notified to all Members sufficiently in advance of the actual commencement of the arbitration process", without explicit requirement of any action on the part of the DSB. Thus, these arbitration procedures under the DSU can be contrasted with the explicit requirements for the establishment of a panel described in Article 6, namely the initial request(s) by a Member and the subsequent establishment of a panel at a DSB meeting.

2.13. The difference in explicit procedural requirements, as well as the difference in designation between "arbitration" and "panel", is consistent with Article 2 of the DSU, which sets out the functions and authority of the DSB. In particular, although the DSB has "the authority to establish panels", Article 2 makes no specific reference to the role of the DSB in relation to arbitrations. Further, it does not necessarily follow from its authority "to administer these rules and procedures" or other general functions that the DSB must carry out the specific act of referral to arbitration under Article 22.6, or under Articles 21.3(c) and 25.

2.14. Further, we find it difficult to equate the arbitration referral procedure under Article 22.6 with that of panel establishment under Article 6 in light of the decision-making rule in Article 2.4, which states that "[w]here the rules and procedures of this Understanding provide for the DSB to take a decision, it shall do so by consensus." The establishment of panels authorized under Article 2.1 is based on negative consensus, as stipulated in Article 6.1. Similarly, adoption of panel and Appellate Body reports under Articles 16.4 and 17.14, respectively, is achieved through negative consensus decisions by the DSB, as is the authorization of suspension of concessions under Articles 22.6 and 22.7. Interpreting Article 22.6 to include a requirement of referral by the DSB implicates the decision-making rule that would apply to such action[48], yet there is no explicit reference to such a decision in the text of Article 22.6.[49]

2.15. We note that the initiation of dispute settlement proceedings without DSB action is envisaged in other contexts in the DSU, most notably for appeal procedures, which are triggered by notification of an appeal to the DSB pursuant to Article 16.4. In such circumstances, the DSB does not take any action to refer the matter to the Appellate Body, or indeed any action whatsoever in respect of the appeal, until the adoption of the reports. Other procedures in the dispute settlement process may also occur without DSB involvement, such as the suspension of

[48] In this connection, we note that the applicable decision-making rule of a particular DSB action may, in accordance with Article 1.2 of the DSU, derive from "special or additional rules and procedures on dispute settlement contained in the covered agreements as are identified in Appendix 2 to this Understanding". This includes the procedures in Annex V of the SCM Agreement for obtaining information concerning serious prejudice, which "the DSB shall, upon request, initiate" in accordance with paragraph 2 thereof. The initiation of these procedures was noted by the Appellate Body to be "a procedural incident of the DSB's decision to establish a panel when the initiation of an Annex V procedure has been requested", and further "that such action occurs automatically when there is a request for an initiation of an Annex V procedure and the DSB establishes a panel". Appellate Body Report, *US – Large Civil Aircraft (2nd complaint)*, paras. 511 and 524. Importantly, the initiation of such Annex V procedures is partially contingent upon panel establishment by negative consensus of the DSB as explicitly required under Article 7.4 of the SCM Agreement. Further, as noted by the Appellate Body of the Annex 5 procedures, "to the extent that there is a conflict [with the DSU], those provisions of the SCM Agreement identified in Appendix 2 to the DSU prevail, *including over Article 2.4 of the DSU*". Ibid. para. 509. (emphasis added)

[49] For example, the European Union states in its communication to the DSB that "it is also *the DSB* that refers the matter to arbitration, unless *the DSB* decides by consensus not to do so". WT/DS386/38. (emphasis original) Mexico and the United States consider that "Article 22.6 does not provide for a departure from the positive consensus requirement under Article 2.4"; this "would permit any Member to block the decision, which would defeat the referral to arbitration contemplated by the DSU and would leave unclear the status of the request for arbitration". Communication from Mexico and the United States to the Arbitrator, 31 July 2015, Annex - Joint Communication Regarding the Proper Interpretation of Article 22.6 of the DSU Regarding the Referral of a Request to Arbitration, para. 9.

panel proceedings and automatic lapse of the panel's authority under Article 12.12, which is triggered by the request of the complaining party. Based on such considerations, we are not persuaded that the initiation of every dispute settlement proceeding under the DSU, including arbitrations, must require action on the part of the DSB.

2.16. At the same time, our approach does not diminish the exclusive role of the DSB in receiving and authorizing requests for suspension of concessions under Article 22, which applies irrespective of whether there is arbitration under Article 22.6. We also observe that, neither the parties nor any other Member, including the European Union[50], have asserted any prejudice to its interests or rights under the DSU as a result of the manner of referral to this arbitration.

2.17. As indicated above, the text of Article 22.6 does not explicitly require referral to arbitration by the DSB. Furthermore, the context found in other provisions of the DSU, particularly regarding other arbitration procedures, suspension and lapsing of panels, and initiation of appeals, suggests that it is not necessary for the DSB to have an active role in all dispute settlement procedures for them to occur. While agreeing that a resolution of this issue by Members would be desirable, the Arbitrator sees no reason in the present case to read such a formal requirement into Article 22.6.

2.18. Therefore, the Arbitrator concludes that the procedural absence of formal DSB action in this case does not call into question the vesting of jurisdiction or the capacity of the Arbitrator to proceed. Hence, there was no reason in the present circumstances to suspend or terminate the proceedings on the basis of the manner of referral to arbitration.

2.2 Third-Party Rights

2.19. At the organizational meeting on 3 July 2015, Canada and Mexico requested to be third parties in their respective proceedings. Canada and Mexico clarified that they were seeking to have the right to be present at the entirety of the hearing and to have access to all written submissions. When asked specifically whether Canada was seeking a right to comment on issues not pertaining to its own case, Canada stated that it envisaged a right to comment where "issues of comparison" would arise.[51] The United States raised systemic concerns in respect of third-party rights, taking the view that such rights were not provided for in arbitration proceedings. However, the United States supported "full participation" of Canada and Mexico in each other's case.[52]

2.20. As noted in previous arbitrations under Article 22.6 of the DSU, arbitrators, like panels, have "a margin of discretion to deal, always in accordance with due process, with specific situations that may arise in a particular case and that are not expressly regulated."[53] The DSU does not contain a specific provision on third-party rights in Article 22.6 arbitration proceedings, nor does it deny any such rights. Noting the absence of any such provision, previous arbitrators have denied requests for third-party status on the grounds that the party making the request could not show that its rights would be adversely affected through their inability to participate in the proceedings.[54] However, arbitrators have authorized participation by Members not directly involved in the arbitration in certain situations. We note that in the two parallel arbitration proceedings in the *EC – Hormones* dispute, participation rights were granted because it was considered that the rights of the requesting Members "may be affected in both arbitration

[50] See WT/DS386/38, last paragraph: "The European Union does not intend at this time to intervene further in these particular proceedings."
[51] Statement made by Canada at the organizational meeting of 3 July 2015.
[52] Statement made by the United States at the organizational meeting of 3 July 2015.
[53] Decisions by the Arbitrators, *EC – Hormones (Canada) (Article 22.6 – EC)*, para. 7; *EC – Hormones (US) (Article 22.6 – EC)*, para. 7; *US – Gambling (Article 22.6 – US)*, para. 2.31.
[54] Decisions by the Arbitrators, *EC – Bananas III (US) (Article 22.6 – EC)*, para. 2.8 ("However, in light of the absence of provisions for third-party status under Article 22 of the DSU and given that we do not believe that Ecuador's rights will be affected by this proceeding, we declined Ecuador's request. In this regard, we note that our Initial and Final Decisions in this arbitration fully respect Ecuador's rights under the DSU, and, in particular, Article 22 thereof."); *Brazil – Aircraft (Article 22.6 – Brazil)*, para. 2.5 ("Our decision took into account the views expressed by the parties, the fact that there is no provision in the DSU as regards third party status under Article 22, and the fact that we do not believe that Australia's rights would be affected by this proceeding."); *US – Gambling (Article 22.6 – US)*, para. 2.31 ("The Arbitrator sees no basis for assuming that its determination under Article 22.7 of the DSU in respect of Antigua and Barbuda's request to suspend concessions and other obligations would be such as to adversely affect the EC's rights").

proceedings".[55] In particular, it was noted that the product scope and relevant trade barriers were the same in both proceedings and that both arbitrators (composed of the same three individuals) might adopt the same or very similar methodologies.[56] On these grounds, combined with the absence of any prejudice to the interests or due process rights of the respondent, the Members requesting suspension of concessions in the parallel cases were allowed "to attend both arbitration hearings, to make a statement at the end of each hearing and to receive a copy of the written submissions made in both proceedings."[57]

2.21. In considering the requests of Canada and Mexico, we have taken into account the discretion of the Arbitrator to address procedural issues that are not specifically regulated in the DSU. Moreover, we consider the present circumstances to be similar to those present in the *EC – Hormones* arbitrations in respect of: similar products and relevant trade barriers being at issue; the potential need to adopt the same or similar methodologies in each proceeding; and, as confirmed by its agreement to participatory rights at the organizational meeting, the absence of any prejudice to the interests or due process rights of the United States. In particular, in view of the potential implications of adopting different methodologies, we cannot exclude the possibility that the rights of Canada and Mexico would be adversely affected through their inability to make a statement and submissions, and answer questions, in each other's proceedings.

2.22. In light of the foregoing, and based on the views of the parties expressed at the organizational meeting, the Arbitrator inserted the following paragraph in the respective Working Procedures of DS384 and DS386:

> For the purposes of joining these proceedings with those in the parallel dispute [DS384][DS386], [Canada][Mexico] will be included in all communications of the Arbitrator and of the parties, including their submissions. [Canada][Mexico] will also be allowed to be present throughout the joint substantive meeting in DS384 and DS386.

2.23. We have granted the above rights on the basis of our margin of discretion as described above. We note that these rights are not the same as those accorded to third parties in panel proceedings pursuant to Article 10 of the DSU. In particular, third parties in panel proceedings may make submissions in another party's case, including on issues not pertaining to its own case. Further, Canada and Mexico have been granted full access to all submissions and communications in each other's arbitration, including those made after the meeting with the Arbitrator.

2.24. We consider that this affords Canada and Mexico the access and participatory rights requested, including the opportunity to comment on "issues of comparison" for purposes of each respective arbitration. Thus, Canada and Mexico have been allowed to fully participate in each other's proceeding to the extent necessary under the circumstances of these parallel arbitration proceedings.

3 MAIN ARGUMENTS OF THE PARTIES

3.1. The parties have summarized their arguments in their executive summaries provided to the Arbitrator.[58] In this section, we briefly set out the main elements of the parties' submissions made in these proceedings. We discuss in greater detail the parties' individual arguments in our analysis in sections 5 and 6 below.

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[55] Decisions by the Arbitrators, *EC – Hormones (Canada) (Article 22.6 – EC)*, para. 7*; EC – Hormones (US) (Article 22.6 – EC)*, para. 7.

[56] The arbitrators added that "[t]his is all the more necessary because the arbitrators are called upon to arrive at a specific determination on the amount of nullification and impairment caused by the ban. They are therefore not limited, as in most panel proceedings, to ruling only on the consistency of the amounts proposed by the US and Canada with DSU provisions. Due process thus requires that all three parties receive the opportunity to comment on the methodologies proposed by each of the parties." Decisions by the Arbitrators, *EC – Hormones (Canada) (Article 22.6 – EC)*, para. 7*; EC – Hormones (US) (Article 22.6 – EC)*, para. 7.

[57] Decisions by the Arbitrators, *EC – Hormones (Canada) (Article 22.6 – EC)*, para. 7*; EC – Hormones (US) (Article 22.6 – EC)*, para. 7.

[58] See executive summaries of the parties' arguments, Annex B.

3.1 Overview of the nullification or impairment claimed by Canada and Mexico

3.2. Canada and Mexico both claim nullification or impairment suffered as a result of the COOL measure[59] in respect of two types of losses, namely (a) export revenue losses and (b) revenue losses from domestic price suppression. Both describe export revenue losses as a combination of suppressed prices and reduced quantities of livestock exported to the United States.[60] In respect of losses suffered from domestic price suppression, both Canada and Mexico submit that due to "arbitrage" conditions in the North American livestock market, reduced export prices lead to suppression of domestic prices in their respective markets.[61]

3.3. Canada claims losses in respect of four different categories of livestock, namely feeder cattle, fed cattle, feeder pigs, and fed hogs.[62] Canada describes the level of its export revenue losses as totalling CAD 2,045 million[63] and its losses from domestic price suppression as totalling CAD 1,023.1 million.[64]

3.4. Mexico claims losses in respect of only one category of livestock, namely feeder cattle.[65] Mexico submits USD 514.8 million in export revenue losses and USD 198.6 million in losses from domestic price suppression.[66]

3.5. The respective methodologies used by Canada and Mexico to calculate the level of nullification or impairment overlap to a considerable extent. In particular, both use the same basic framework, namely a comparison between *actual* revenues obtained in a given baseline year after

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[59] Canada and Mexico request authorization to suspend concessions or other obligations based on the nullification or impairment of benefits caused by the original and amended COOL measures, reviewed in the original and compliance stages of these disputes, respectively. In this Decision, we refer to the original and amended COOL measures separately where the distinction is relevant, and more generally to "the COOL measure" when referring to combined aspects or effects of the original and amended COOL measures.

[60] Canada's methodology paper, Sumner Study, para. 2; Mexico's methodology paper, paras. 18-23. Canada and Mexico both submitted two documents consisting of an introductory document (referenced in this Decision as "Canada's methodology paper" and "Mexico's methodology paper", respectively) and attached to that introductory document a comprehensive methodology paper (referenced in this Decision as "Canada's methodology paper, Sumner Study" and "Mexico's methodology paper, Pouliot Study", respectively).

[61] Canada's response to Arbitrator question No. 22, para. 64 (stating that "[t]he arbitrage mechanism means simply that producers and shippers would adjust quantities exported to eliminate any price discrepancy" between livestock prices in Canada and the United States); Mexico's methodology paper, Pouliot Study, p. 5 (describing "arbitrage by Mexican feeder cattle producers [causing] the price of feeder cattle in Mexico to adjust until the return on selling feeder cattle in the US export market equals that on selling of feeder cattle in the Mexican domestic market"). See also section 5.2.1.1 below regarding arbitrage conditions under which price differences between locations are equalized in an integrated market.

[62] Canada's methodology paper, Sumner Study, para. 4:

> Canadian feeder cattle are young steers and heifers of between about 300 and 950 pounds, that are typically marketed domestically or exported to the United States to be intensively fed grain in preparation for slaughter. Fed cattle are steers and heifers marketed for immediate slaughter and typically weigh between 1250 and 1450 pounds after intensive feeding, and are typically less than 24 months of age. Canadian feeder pigs are young barrows and gilts, typically marketed domestically or exported to the United States at weights between 12 pounds and 100 pounds to be intensively fed grain in preparation for slaughter. Fed hogs are barrows and gilts marketed for immediate slaughter, typically at weights of between 250 and 320 pounds after undergoing intensive feeding. These categories correspond to those used in data sources in both the United States and Canada. (footnote omitted)

[63] The breakdown of claimed losses per category of livestock is as follows: CAD 760.9 million for fed cattle; CAD 508 million for feeder cattle; CAD 479.3 million for fed hogs; and CAD 296.8 million for feeder pigs. See Canada's methodology paper, Sumner Study, para. 144.

[64] The breakdown of claimed losses per category of livestock is as follows: CAD 95.1 million for fed cattle; CAD 233.1 million for feeder cattle; CAD 369.5 million for fed hogs; CAD 325.4 million for feeder pigs. See Canada's methodology paper, Sumner Study, para. 144.

[65] Mexico assesses the impact of the COOL measure on two weight categories of feeder cattle, namely a 350lb weight category (based on feeder steers weighing between 300 and 350lb and between 350 and 400lb) and a second weight category of 550lb (for feeder steers weighing between 500 and 550lb and between 550 and 600lb). Mexico's methodology paper, Pouliot Study, p. 9. We recall the original panel's explanation that "Mexico generally exports *feeder cattle* immediately after the cow/calf stage to US backgrounding and feeding operations, because of a lack of sufficient grasslands in Mexico and the general lack of well-developed feed grains and cattle-feedlot sectors." Panel Reports, *US – COOL*, para. 7.141. (footnotes omitted) (emphasis original)

[66] Mexico's methodology paper, Pouliot Study, pp. 24-25.

the expiry of the reasonable period of time (RPT), and *estimated* revenues that would have been obtained in that year absent the COOL measure.[67] The methodologies of both Canada and Mexico use a one-year reference period following the expiration of the RPT pursuant to Articles 21.3 and 22.2 of the DSU.[68]

3.6. In respect of the price estimation, Canada and Mexico follow the same general approach of econometrically estimating the COOL impact by means of regression analysis. In that analysis, both Canada and Mexico estimate the impact of the COOL measure not on the actual export price of livestock, but on the price basis, namely the difference or gap between the US price and their own export price (which is defined differently by Canada and Mexico).[69] However, in respect of feeder pigs, Canada does not use regression analysis to estimate the price, but relies instead on a descriptive comparative analysis of prices based on invoices provided by a large Canadian firm trading both in the US domestic and the Canadian export market.[70]

3.7. In respect of the estimation of quantity impacts, Canada's and Mexico's approaches differ. Canada estimates export quantities in the same way as price, namely through econometric estimation. Mexico employs an elasticity-based simulation using the estimated price impact and a derived elasticity figure to arrive at the impact on export quantities.[71]

3.8. To calculate domestic price suppression losses, Canada and Mexico multiply the quantity of livestock in their respective domestic markets (subtracting the quantity exported in order to avoid double-counting) by the above counterfactual export price. Canada assumes full (one to one) transmission of export price effects to the domestic price. Mexico applies a transmission coefficient of 0.678 to account for factors that mitigate full transmission.[72]

3.9. Canada's and Mexico's explanations of their methodologies, as well as details on their respective specifications and data used, are discussed in section 5 below.

3.2 The relevant counterfactual

3.10. As noted above, Canada and Mexico compare *actual* revenues obtained in a given baseline year after the expiry of the RPT, and *estimated* revenues that would have been obtained in that year absent the COOL measure. Both Canada and Mexico base this comparison on the assumption that the United States would have come into compliance with the recommendations and rulings of the DSB by withdrawing the COOL measure.

3.11. While the United States points out that there could be other options for compliance, it accepts, for the purposes of this arbitration, the counterfactual in which the COOL measure has been withdrawn.[73] In its own alternative methodology, the United States applies this

[67] Canada's methodology paper, Sumner Study, para. 6; Mexico's methodology paper, para. 13.
[68] The parties use slightly different base-periods, 23 November 2013 to 23 November 2014 for Canada, and the calendar year of 2014 for Mexico. Canada's methodology paper, Sumner Study, para. 9; Mexico's methodology paper, para. 12.
[69] Specifically, Canada compares the price of Canadian and US-origin livestock in two different countries (i.e. Canada and the United States), while Mexico compares the prices of Mexican and US-origin livestock in the same country (i.e. the United States). See section 5.2.1.1 below.
[70] See section 5.2.1.3 below.
[71] As discussed in section 5.2.2.2 below, the elasticity value measures the responsiveness of quantity impacts to a change in price. The change in quantity is "simulated" based on the responsiveness to the estimated change in price attributed to the COOL measure.
[72] Canada's methodology paper, Sumner Study, paras. 31-35; Mexico's methodology paper, Pouliot Study, p. 8.
[73] United States' written submission, para. 22. The United States submitted two separate written submissions – the written submission in respect of the proceeding against Canada in DS384 (hereinafter United States' written submission (Canada)) and the written submission in respect of the proceeding against Mexico in DS386 (hereinafter United States' written submission (Mexico)). For reference purposes, a citation to a paragraph or footnote that is identically numbered in both written submissions will refer only to a single paragraph or footnote number, and cite simply to the "United States' written submission". Where the reference is to a paragraph or footnote number that differs in the respective submissions, the written submissions are distinguished as indicated above.

counterfactual to assess, within the baseline period of 2014, "the effect of removing any incentives or 'discounts' resulting from the amended COOL measure".[74]

3.12. Thus, the parties are generally in agreement that the relevant counterfactual for the purposes of this arbitration is the situation that would exist in the baseline period in the absence of the COOL measure. The parties differ, however, in their approach to assessing the impact of the COOL measure.

3.3 The United States' three-pronged challenge against the levels of suspension proposed by Canada and Mexico

3.13. The United States challenges the proposed levels of suspension in three separate ways, arguing that "[a]ny one of these ways is sufficient to meet the U.S. burden and each one on their own establishes that Canada and Mexico's requests are inconsistent with the DSU."[75]

3.14. First, the United States directly challenges various aspects of the methodologies used by Canada and Mexico. The United States' main focus is on the use of econometric modelling, which it considers "inappropriate for the question at issue".[76] More specifically, the United States contests the use of price basis and argues that Canada's and Mexico's econometric estimations are formulated incorrectly and suffer from variable omission. The United States also challenges Canada's feeder pig price estimation as well as Mexico's quantity simulation. Finally, the United States raises a number of specific issues relating to the data used to estimate COOL impacts under the econometric approach.

3.15. Second, the United States also challenges the proposed level of suspension by submitting an alternative methodology. According to the United States, this alternative methodology "is appropriate for the question presented and accurately estimates the levels of nullification or impairment, as opposed to the econometric models proposed by the requesting parties."[77] The alternative methodology proposed by the United States is a partial equilibrium model, more specifically an "equilibrium displacement model" (EDM). Applying its EDM, the United States calculates that Canada's export revenue losses amount to USD 43.22 million and Mexico's losses amount to USD 47.55 million.[78]

3.16. Third, the United States challenges, as a threshold matter of legal interpretation and for methodological reasons, the inclusion of domestic price suppression losses in the level of nullification or impairment of benefits.[79]

3.4 Canada's and Mexico's arguments on the EDM

3.17. Canada and Mexico contest the use of an alternative methodology as a means of setting out a *prima facie* case against their own methodologies.[80] Canada and Mexico also raise a number of arguments against the methodology itself. Canada's and Mexico's main criticism in this respect is that the EDM proposed by the United States does not reflect the segregation and differential compliance costs which underlie the findings of WTO-inconsistency in this dispute.[81] Furthermore,

[74] United States' written submission, para. 22.
[75] United States' opening statement at the meeting of the Arbitrator, para. 10; see also United States' response to Arbitrator question No. 1, where the three *prima facie* cases are presented in a different order. See section 4.2 below on burden of proof.
[76] United States' opening statement at the meeting of the Arbitrator, para. 10; see also United States' response to Arbitrator question No. 1, where this is described as the second *prima facie* case.
[77] United States' opening statement at the meeting of the Arbitrator, para. 11; see also United States' response to Arbitrator question No. 1, where this is described as the first *prima facie* case.
[78] United States' written submission, para. 60.
[79] United States' opening statement at the meeting of the Arbitrator, para. 13; see also United States' response to Arbitrator question No. 1; United States' responses to Arbitrator question Nos. 22 and 50.
[80] Canada's response to Arbitrator question 1, para. 2; see also Canada's oral statement, para. 10; Mexico's written submission, para. 10; Mexico's response to Arbitrator question No. 1, para. 4.
[81] Canada's written submission, paras. 67-73; Mexico's written submission, paras. 25-31 and 35-39.

Canada and Mexico take issue with the elasticity values used by the United States.[82] We describe how we address these arguments in section 4.3 below.

4 PRELIMINARY ISSUES

4.1 Mandate of the Arbitrator

4.1. The United States objects to the levels of suspension indicated by Canada and Mexico in their requests to the DSB on the grounds that these levels are not equivalent to the nullification or impairment caused.[83] We begin by recalling our mandate as set out in Article 22.7 of the DSU, which states in relevant part:

> The arbitrator acting pursuant to paragraph 6 shall not examine the nature of the concessions or other obligations to be suspended but *shall determine whether the level of such suspension is equivalent to the level of nullification or impairment*.[84]

4.2. Thus, our task in these proceedings is to examine whether there is equivalence between the proposed level of suspension and the level of nullification or impairment.[85] The nullification or impairment in question is, as the arbitrator in *US – 1916 Act (Article 22.6 – EC)* noted, that "sustained by the complaining party as a result of the failure of the responding party to bring its WTO-inconsistent measures into compliance".[86]

4.3. "Equivalence", as the arbitrator in *EC – Bananas (US) (Article 22.6 – EC)* observed, "connotes a correspondence, identity or balance between two related levels, i.e. between the level of the concessions to be suspended, on the one hand, and the level of the nullification or impairment, on the other".[87]

4.4. The levels of suspension that Canada and Mexico propose correspond to the levels of nullification or impairment that each has identified in their respective methodology papers. Our task is to assess Canada's and Mexico's determinations of their respective levels of nullification or impairment. If we cannot accept Canada's and Mexico's determinations, our mandate requires us to make our own determination.[88] As the arbitrator in *EC – Hormones (US) (Article 22.6 – EC)* stated:

> There is … a difference between our task here and the task given to a panel. In the event we decide that the US proposal is *not* WTO consistent, i.e. that the suggested amount is too high, we should not end our examination the way panels do, namely by requesting the DSB to recommend that the measure be brought into conformity with WTO obligations. Following the approach of the arbitrators in the *Bananas* case … we would be called upon to go further. In pursuit of the basic DSU objectives of prompt and positive settlement of disputes we would have to estimate the level of suspension we consider to be equivalent to the impairment suffered. This is the essential task and responsibility conferred on the arbitrators in order to settle the dispute. In our view, such approach is implicitly called for in Article 22.7.[89]

4.5. We note that in making their own determination of the level of nullification or impairment, previous arbitrators developed their own appropriate methodologies[90], which were either based on

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[82] Canada's written submission, paras. 85-87; Mexico's written submission, paras. 32-34.
[83] This arbitration does not concern any claim under Article 22.3 of the DSU.
[84] Emphasis added.
[85] The requirement of "equivalence" is set out in Article 22.4 of the DSU which provides: "The level of the suspension of concessions or other obligations authorized by the DSB shall be equivalent to the level of the nullification or impairment."
[86] Decision by the Arbitrators, *US – 1916 Act (EC) (Article 22.6 – US)*, para. 4.5.
[87] Decision by the Arbitrators, *EC – Bananas III (US) (Article 22.6 – EC)*, para. 4.1.
[88] Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, para. 35.
[89] Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, para. 12. (footnotes omitted) (emphasis original)
[90] See Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US),* para. 3.13.

elements of the methodologies initially proposed by the parties[91] or which followed an altogether different approach.[92] We observe that any determination of nullification or impairment, because it is based on assumptions, is necessarily a "reasoned estimate" relying on "credible, factual, and verifiable information".[93]

4.6. Our decision will determine the level of nullification or impairment with which the level of suspension shall be equivalent. We note that this level of suspension will represent the upper limit of any suspension of concessions or other obligations that Canada or Mexico may apply. While our decision, in this manner, allows the DSB to ensure "equivalence" in any authorization it grants in accordance with Article 22.4 of the DSU, subsequently it will be for the authorized Member to ensure that the suspension is applied in a manner that does not exceed the authorized level.[94]

4.2 Burden of proof

4.7. We agree with previous arbitrators on the applicable standard on burden of proof, which has been summarized by the arbitrator in *EC – Hormones* as follows:

> WTO Members, as sovereign entities, can be *presumed* to act in conformity with their WTO obligations. A party claiming that a Member has acted *inconsistently* with WTO rules bears the burden of proving that inconsistency. The act at issue here is the US proposal to suspend concessions. The WTO rule in question is Article 22.4 prescribing that the level of suspension be equivalent to the level of nullification and impairment. The EC challenges the conformity of the US proposal with the said WTO rule. It is thus for the EC to prove that the US proposal is inconsistent with Article 22.4. Following well-established WTO jurisprudence, this means that it is for the EC to submit arguments and evidence sufficient to establish a *prima facie* case or presumption that the level of suspension proposed by the US is *not* equivalent to the level of nullification and impairment caused by the EC hormone ban. Once the EC has done so, however, it is for the US to submit arguments and evidence sufficient to rebut that presumption. Should all arguments and evidence remain in equipoise, the EC, as the party bearing the original burden of proof, would lose.[95]

4.8. The same arbitrator also observed that "the same rules apply where the existence of a specific *fact* is alleged", noting that "[i]t is for the party alleging the fact to prove its existence."[96]

4.9. Finally, as has been emphasized in previous arbitrations, all parties have a duty to produce evidence and to collaborate in presenting evidence to the arbitrator.[97] It is this duty that requires a requesting party to submit a methodology paper "explaining how it arrived at its proposal and showing why its proposal *is* equivalent to the trade impairment it has suffered".[98]

4.10. As seen above, one of the three ways in which the United States challenges the proposed level of suspension is by using a completely different alternative methodology, which it considers more appropriate and which results in a much lower level of nullification or impairment.[99] We therefore see a need in this case to set out additional considerations on the legal standard of

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[91] See Decision by the Arbitrator, *US – Gambling (Article 22.6 – US)*, para. 3.174.

[92] Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US),* paras. 3.69- 3.79.

[93] Decision by the Arbitrators, *US – 1916 Act (EC) (Article 22.6 – US)*, para. 5.54; see also Decision by the Arbitrators, *EC – Hormones (US)(Article 22.6 – EC),* para. 41.

[94] Decisions by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, paras. 18-19; *US – 1916 Act (EC) (Article 22.6 – US)*, paras. 5.40-5.44 and 7.4; and *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, para. 159.

[95] Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC),* para. 9 (emphasis original); see also Decisions by the Arbitrators, *US – Gambling (Article 22.6 – US)*, para. 2.22; *Canada – Aircraft Credits and Guarantees (Article 22.6 – Canada)*, paras. 2.5-2.8; *US – FSC (Article 22.6 – US)*, paras. 2.8-11; *Brazil – Aircraft (Article 22.6 – Brazil)*, para. 2.8; and *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, paras. 37-41.

[96] Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC),* para. 9.

[97] Decisions by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC),* para. 11; *US – 1916 Act (EC) (Article 22.6 – US)*, para. 3.2; and *US – Gambling (Article 22.6 – US)*, paras. 2.24 and 2.25.

[98] Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, para. 11. (emphasis original)

[99] United States' written submission, para. 6 (stating that the EDM "more accurately estimates the trade effects of the COOL measure").

burden of proof, and in particular, to further explore the role of opposing methodologies submitted in Article 22.6 arbitration proceedings. In the United States' view, presenting a different calculation of the level of nullification or impairment is a *prima facie* demonstration that the levels proposed by Canada and Mexico are inconsistent with the DSU. While alternative methodologies have been proposed and discussed in previous arbitrations, this is the first time that an objecting party explicitly presents an alternative methodology on its own merits for purposes of satisfying its initial burden of proving that the level of nullification or impairment proposed is WTO-inconsistent.[100]

4.11. The methodology papers submitted by Canada and Mexico respond to their duty, described above, to produce evidence and collaborate in presenting evidence to the arbitrator. Methodology papers are different from the actual request to suspend concessions or other obligations at a proposed level, which, as seen above, is the "act at issue" that is presumed to be in conformity with WTO obligations. However, the underlying methodologies are inextricably linked with the proposed level of suspension in that they substantiate and explain the grounds on which the act at issue is based. Because the proposed level of suspension rests on the underlying methodology, establishing that the proposed level of suspension is WTO-inconsistent necessarily involves showing that it does not follow from the underlying methodology, or that the methodology itself is flawed. This necessitates engagement by the objecting party with the methodology underlying the proposed level of suspension.

4.12. It may be possible to present an alternative methodology as a way of engaging with, and contributing to disproving, a proposed methodology. However, merely putting forward, as was done here, a different methodology as "appropriate"[101] or as one that "more accurately estimates"[102] the level of nullification or impairment is not sufficient. In the absence of a demonstration that the proposing party's methodology is incorrect, the mere submission of an alternative methodology would not meet the objecting party's burden of proof. This is because the alternative methodology does not, in itself, assist the Arbitrator in determining whether the result from the first methodology is (or is not) equivalent to the level of nullification or impairment. In such a situation, it would follow from the rules on burden of proof that the objecting party has not proved that the act at issue is WTO-inconsistent.

4.13. The onus is therefore on the United States to show that the proposed level of suspension is inconsistent with the DSU by engaging with the methodologies proposed by Canada and Mexico, and demonstrating that they do not lead to a result that is equivalent to the level of nullification or impairment.

4.14. In sum, we are of the view that, in order to meet its *prima facie* burden, an objecting party under Article 22.6 of the DSU must engage with the methodology used to arrive at the proposed level of suspension and that it is not sufficient merely to assert that another methodology is more appropriate. We therefore find that, in merely proposing an alternative methodology, the United States has not validly established a *prima facie* case against the levels of suspension proposed by Canada and Mexico.

4.3 Order of analysis

4.15. In light of the above considerations on our mandate and the apportioning of the burden of proof, we proceed with our analysis in the following order.

4.16. We will first assess the methodologies proposed by Canada and Mexico in examining whether the United States has successfully established that the proposed levels of suspension are in excess of the level of nullification or impairment. This assessment will focus on determining

[100] For example, in *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)*, the objecting party proposed an economic model to estimate trade effects. Decision by the Arbitrators, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)*, paras. 3.83-3.94. The objecting party's alternative model, however, only arose in response to questions by the arbitrator and was assessed in connection with the arbitrator's discussion of its own determination of the equivalent level of nullification or impairment. Ibid. paras. 3.82-3.83. Similarly, in *US – Gambling (Article 22.6 – US),* the objecting party proposed its alternative model once it had already addressed certain concerns regarding the methodology used by the requesting party. Decision by the Arbitrator, *US – Gambling (Article 22.6 – US)*, para. 3.145.

[101] United States' opening statement at the meeting of the Arbitrator, para. 11.

[102] United States' response to Arbitrator question No. 1, para. 5.

specific points of validity or error in the proposed methodologies based on the arguments and evidence submitted by the parties.

4.17. In assessing the Canadian and Mexican methodologies, we will begin by considering which losses can be included in the nullification or impairment of benefits accruing to Canada and Mexico, and will then proceed to assessing the calculation of such losses. We observe that the United States, in its third line of argument described above, argues that losses from domestic price suppression cannot be included in the nullification or impairment considered under Article 22 of the DSU. As this involves a threshold question of a legal nature, we consider it appropriate, indeed necessary, to examine the permissible scope of relevant losses before turning to the actual calculations.

4.18. We will then examine the actual calculations of the losses as presented by Canada and Mexico under their proposed methodologies. We will assess these calculations in light of the criticisms submitted by the United States in its first line of argument described above. We note that many of the arguments discussed in this respect turn on factual allegations that are contested between the parties, and we recall that each party bears the burden of substantiating its own factual allegations. While recognizing that our mandate under Article 22.6 of the DSU differs from that of panels, we will be guided by the principles of Article 11 of the DSU in objectively assessing the arguments made and evidence submitted by the parties.[103]

4.19. We will examine all elements of Canada's and Mexico's methodologies in determining whether the proposed level of suspension is equivalent to the level of nullification of impairment. The reason is that, for the purposes of making our own determination, we will consider all elements of methodologies that are on the table, retaining those elements of the proposed methodologies that we conclude are acceptable. Likewise, we will consider the United States' EDM to assess its comparative merits and shortcomings, and to ascertain which elements if any of the EDM may assist us in deciding upon the approach to adopt for our reasoned estimate of the level of nullification or impairment.

5 ASSESSMENT OF THE PROPOSED LEVEL OF SUSPENSION

5.1 Inclusion of domestic price suppression losses in the level of nullification and impairment

5.1. In this section, we address the United States' challenge against the inclusion of domestic price suppression losses in Canada's and Mexico's determination of the level of nullification or impairment of benefits. We recall that Canada claims domestic price suppression losses in the amount of CAD 1,032.1 million. Mexico claims domestic price suppression losses in the amount of USD 198.6 million.[104]

5.1.1 Arguments of the parties

5.2. The United States objects to the inclusion of such losses on the grounds that there is "no basis under the DSU for considering domestic price suppression as a part of the level of nullification or impairment of benefits under the TBT Agreement or the GATT 1994".[105] The United States asserts that the level of nullification or impairment flows from the benefits under the covered agreements[106], and in the present case the trade benefit "relates to international trade in livestock, not to domestic markets."[107] The United States argues that past Article 22.6 arbitrations "involving the Multilateral Agreements on Trade in Goods have focused on the 'trade effect' of the WTO-inconsistent measure".[108] According to the United States, Canada's and Mexico's "claims with

[103] See Decision by the Arbitrators, *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, para. 52.
[104] Canada's methodology paper, Sumner Study, paras. 31-42 and 140-143; Mexico's methodology paper, paras. 24-27; Mexico's methodology paper, Pouliot Study, pp. 21-24.
[105] United States' written submission, para. 118.
[106] United States' written submission, paras. 119-121.
[107] United States' written submission, para. 122.
[108] United States' written submission, para. 120 (referring to Decisions by the Arbitrators, *US – Offset Act (Byrd Amendment) (Article 22.6 – US)*, paras. 3.38 and 3.69; *EC – Hormones (Article 22.6 – EC)*, para. 41; *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, paras. 168-169; *EC – Bananas III (US) (Article 22.6 – EC)*, paras. 6.6-6.12; and *US – Gambling (Article 22.6 – US)*, para. 3.123).

respect to internal transactions *within* their domestic economies … are not lost exports to the United States, and thus are not properly included in a measurement of either Canada or Mexico's nullification or impairment of trade benefits under the covered agreements".[109] The United States also argues that, if domestic price suppression losses are included in the nullification or impairment, the level of suspension would similarly have to account for broader economic effects of the suspension within the United States in order to maintain equivalence under Article 22.4 of the DSU.[110] In the United States' view, "the requesting parties' approach would include domestic price effects on only one side of the equation (the side that benefits them), and would omit it and other economic effects from the other side of the equation" in contravention of the equivalence requirement.[111]

5.3. According to Canada, Article 3.3 of the DSU "sets out a very broad ground rule for WTO dispute settlement" that includes benefits accruing "directly or indirectly" under the covered agreements.[112] Canada defines the benefit in question as "national treatment for Canadian live cattle and hogs in the United States", a benefit that was adversely affected resulting, given the "highly integrated and co-dependent nature of the two markets … in more Canadian livestock in Canada, which suppressed the prices of these animals in the Canadian market, resulting in specific and quantifiable losses."[113] Canada maintains that these are "direct losses from the denial of a direct benefit".[114] Canada argues in the alternative that these domestic price suppression losses are "at the very least losses that result from the impairment of an indirect benefit of national treatment, which is a benefit covered under the DSU".[115] Canada submits that there is nothing in the DSU that limits the level of nullification or impairment to "export losses", and cites prior Article 22.6 arbitrations in support of "a broad interpretation of 'trade effects'."[116] Canada thus contends that "trade effects" need not be limited to export losses, but can include domestic impacts where causation can be demonstrated.[117]

5.4. Mexico states that the benefit being nullified or impaired is the "right of not having to face a measure like the COOL measure."[118] According to Mexico, it is "[b]y virtue of the nullification or impairment of this benefit by the COOL measure, [that] Mexican domestic prices have been suppressed."[119] Mexico argues that the covered agreements refer to direct or indirect benefits, and that Mexico's benefits under the covered agreements "should have prevented this [domestic] price suppression from occurring".[120] Mexico also relies on previous arbitrations in which it contends effects on domestic markets were not excluded.[121] Mexico thus submits that the losses to be calculated in estimating nullification or impairment are those that can be shown to be *caused* by the WTO-inconsistent measure.[122]

5.1.2 Analysis by the Arbitrator

5.5. The question raised in this arbitration is whether (and, if so, how) "price suppression losses" incurred by Canadian and Mexican livestock producers in their domestic markets can be included in the level of nullification or impairment under Article 22 of the DSU.

5.6. Although prior arbitrators have considered losses other than those based strictly on actual trade flows, this specific question has not previously been addressed in arbitration proceedings. For instance, the arbitrator in *EC – Bananas III (Ecuador) (Article 22.6 – EC)* rejected Ecuador's

[109] United States' written submission, para. 121. (emphasis original)
[110] United States' written submission, paras. 126-127; United States' opening statement at the meeting of the Arbitrator, para. 59.
[111] United States' opening statement at the meeting of the Arbitrator, para. 67 (citing Decision by the Arbitrators, *EC – Bananas III (US) (Article 22.6 – EC)*, para 7.1.
[112] Canada's written submission, para. 95.
[113] Canada's written submission, para. 96.
[114] Canada's written submission, para. 96.
[115] Canada's written submission, para. 97.
[116] Canada's written submission, para. 100.
[117] Canada's written submission, paras. 101-107. See also Canada's opening statement at the meeting of the Arbitrator, para. 31.
[118] Mexico's written submission, para. 57.
[119] Mexico's written submission, para. 57.
[120] Mexico's written submission, para. 69.
[121] Mexico's written submission, paras. 73-78.
[122] Mexico's written submission, paras. 60-68.

argument that "the total economic impact of the EC banana regime should be taken into account by the Arbitrators by applying a multiplier when calculating the level of nullification and impairment suffered by Ecuador", on the grounds that Ecuador had not included this in its initial request to the DSB.[123] The arbitrator in *US – Gambling (Article 22.6 – US)* similarly decided not to apply "a multiplier reflecting the aggregate change in output" and indirect, cross-sectoral effects of the measure on the domestic economy, but this decision was not based on a legal interpretation of the scope of "benefits" accruing under the covered agreements.[124] While the arbitrators in *US – 1916 Act (EC) (Article 22.6 – US)* and *US – Section 110(5) Copyright Act (Article 25)* did not strictly limit their analysis to "trade effects", their "reliance on the broader concept of economic impact was dictated by the nature of the measures at issue", which did not directly restrict trade.[125] Moreover, the effects they considered were not focused on economic gains or losses *within* the domestic market of the requesting parties.[126] Finally, although the arbitrator in *US – Offset Act (Byrd Amendment) (Article 22.6)* observed that "the term 'trade effect' is found neither in Article XXIII of the GATT 1994, nor in Article 22 of the DSU", it recognized that "the 'trade effect' approach … seems to be generally accepted by Members as *a* correct application of Article 22 of the DSU".[127]

5.7. As discussed above, our mandate under Article 22.7 of the DSU is to "determine whether the level of … suspension is equivalent to the level of nullification or impairment". As established by Article 3.1 of the DSU, the concept of "nullification or impairment" is taken from Article XXIII:1 of the GATT 1994, which provides for the nullification or impairment of "any benefit accruing […] directly or indirectly under this Agreement".[128]

5.8. Neither "nullification or impairment" nor the "benefit" accruing under the covered agreements is explicitly defined in the GATT 1994 or in the DSU. The Appellate Body commented on the scope of these concepts in the context of Article 3.8 of the DSU, which provides:

> In cases where there is an infringement of the obligations assumed under a covered agreement, the action is considered *prima facie* to constitute a case of nullification or impairment. This means that there is normally a presumption that a breach of the rules has an adverse impact on other Members parties to that covered agreement, and in such cases, it shall be up to the Member against whom the complaint has been brought to rebut the charge.[129]

5.9. The Appellate Body observed that "Article 3.8 equates the concept of 'nullification or impairment' with 'adverse impact on other Members', although the DSU does not define 'adverse impact'".[130] The Appellate Body further considered that "[t]rade losses represent an obvious example of adverse impact under Article 3.8."[131] At the same time, the Appellate Body did not purport to provide a comprehensive explanation of the types of adverse impact that can be presumed in the case of WTO-inconsistent measures; nor was the Appellate Body concerned with

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[123] Decision by the Arbitrators, *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, para. 24 (stating that this was "not compatible with the minimum specificity requirements for such a request").

[124] Decision by the Arbitrator, *US – Gambling (Article 22.6 – US)*, para. 3.123 (explaining the parties' agreement on the counterfactual basis for calculating nullification or impairment as well as the incompatibility of using a multiplier with other arguments that had been raised by Antigua in that case).

[125] Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)*, para. 3.40.

[126] In particular, it was noted that in *US – Section 110(5) Copyright Act (Article 25)* "no actual trade took place, but rights had been breached which conferred economic benefits", and that in *US – 1916 Act (EC) (Article 22.6 – US)* the challenged measure created the potential for criminal and civil liability of importers, but it "did not automatically restrict trade", making "the broader concept of economic effect … more appropriate." Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)*, para. 3.40; see also Award of the Arbitrators, *US – Section 110(5) Copyright Act (Article 25)*, para. 3.18; Decision by the Arbitrators, *US – 1916 Act (EC) (Article 22.6 – US)*, para. 7.7.

[127] Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)*, paras. 3.70-3.71. (emphasis original)

[128] Article 3.3 of the DSU also refers to the "prompt settlement of situations in which a Member considers that any benefits accruing to it directly or indirectly under the covered agreements are being impaired by measures taken by another Member".

[129] Underline added.

[130] Appellate Body Reports, *EC – Export Subsidies on Sugar*, para. 296.

[131] Appellate Body Reports, *EC – Export Subsidies on Sugar*, para. 299.

quantifying nullification or impairment as is our mandate to fulfil as Arbitrator under Article 22 of the DSU.

5.10. In the context of non-violation complaints under Article XXIII:1(b) of the GATT 1994, "the claimed benefit has been considered to be that of "legitimate expectations of improved market-access opportunities arising out of relevant tariff concessions."[132] The "nullification or impairment" of such benefits has been equated with "'upsetting the competitive relationship' established between domestic and imported products as a result of tariff concessions".[133] In the compliance phase of these disputes, the panel applied a similar understanding of the "nullification or impairment of benefits" with respect to Canada's and Mexico's non-violation claims under Article XXIII:1(b) of the GATT 1994 and Article 26.1 of the DSU.[134] Although the panel was addressing a distinct issue in that context[135], the applicable principles for non-violation nullification or impairment suggest that market access is the primary, though possibly not exclusive, benefit that is nullified or impaired. Such market access may be impaired not only by violations of tariff concessions but also by violations of rules and disciplines on non-tariff measures.[136]

5.11. Unlike non-violation claims, this arbitration concerns the nullification or impairment of benefits that flow from specific provisions violated by the COOL measure.[137] The link between the WTO-inconsistency and the benefits that are nullified or impaired is evident in the text of Article XXIII:1(a) of the GATT 1994, which stipulates that nullification or impairment occurs "*as a result of* the failure of another contracting party to carry out its obligations".[138] Thus, the relevant "benefits" being nullified or impaired are those accruing to Canada and Mexico under the provisions breached by the COOL measure, namely the national treatment obligations of Article 2.1 of the TBT Agreement and of Article III:4 of the GATT 1994.

5.12. It is well-established that the national treatment obligation that has been infringed "requires effective equality of opportunities for imported products to compete with like domestic products".[139] At least *one* benefit flowing from national treatment, therefore, is the ability to compete in a foreign market, which in this case means market access for livestock imported into the United States.[140] Where such market access is the benefit that is being nullified or impaired, the quantification of that nullification or impairment will naturally focus on trade flows (or a proxy thereof) as the measure of such access.[141] We note that Canada's and Mexico's calculations of lost export revenues are aimed at doing just that, namely quantifying the amount of lost market access.

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[132] Panel Report, *Japan – Film*, para. 10.61. The panel noted that "[o]nly in *EC - Citrus Products* did the complaining party claim that the benefit denied was not improved market access from tariff concessions granted under GATT Article II, but rather GATT Article I:1 ('most-favoured-nation') treatment with respect to unbound tariff preferences granted by the EC to certain Mediterranean countries." Panel Report, *Japan – Film*, fn 1223. See also Panel Reports, *EC – Asbestos*, para. 8.285; *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.676.

[133] Panel Report, *Japan – Film*, para. 10.82.

[134] See Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 7.676 and 7.713.

[135] The particular issue addressed by the panel was whether there were "benefits accruing" under WTO agreements when NAFTA (and not the MFN-rate) accorded duty-free access to livestock.

[136] See, e.g. GATT Panel Reports, *EEC – Oilseeds I*, para. 156 (finding "that benefits accruing … under Article II of the General Agreement in respect of the zero tariff bindings for oilseeds … were impaired as a result of the introduction of production subsidy schemes which … prevent the tariff concessions from having any impact on the competitive relationship between domestic and imported oilseeds"); and *EEC – Oilseeds II*, para. 90 (finding "that benefits accruing … under Article II of the General Agreement in respect of the zero tariff bindings for oilseeds … continue to be impaired by the production subsidy scheme" at issue in that dispute).

[137] We note that non-violation complaints are not similarly constrained given that, by definition, no specific provision is violated.

[138] See section 4.1 above. (emphasis added)

[139] See Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.623 (quoting Appellate Body Reports, *EC – Seal Products*, para. 5.101).

[140] This is particularly evident in view of the highly integrated nature of the North American livestock market, discussed further below. Under such circumstances, the legitimate expectations of operators may be easily upset in a duty-free environment where the WTO violation (and market access restriction) comes not from a tariff increase but from a non-tariff measure disproportionately affecting foreign suppliers.

[141] Whether such losses refer to losses of actual or potential trade is a different question that is not raised in this arbitration. See, e.g. Decision by the Arbitrators, *US – 1916 Act (EC) (Article 22.6 – US)*, paras. 5.64-5.72.

5.13. By additionally claiming losses from domestic price suppression, Canada and Mexico go beyond the concept of market access and "trade effects" as the measure of market access. The question, therefore, is whether, in the context of determining nullification or impairment under Article 22 of the DSU, the benefits flowing from national treatment go beyond the benefit of market access, and particularly whether they extend to price effects in the domestic market of a requesting party.

5.14. Canada and Mexico submit that the benefits do go beyond market access, essentially by understanding "nullification or impairment of benefits" to refer to any adverse effects resulting from the violation of the national treatment obligations at issue. According to this logic, the determinative criterion for including or excluding losses would be the causal link between the violation and the claimed effect.[142] We disagree with this view for the three reasons set out below.

5.15. First, with regard to the ordinary meaning of the relevant terms, the breadth of the term "benefit" as used in the covered agreements does not mean that it is unlimited. We recall that the compliance panel in these disputes set forth the following considerations for the scope of the term "benefits" and the significance of their accrual "directly or indirectly":

> Article XXIII:1(b) of the GATT 1994 refers to "any benefit accruing to [a Member] directly or indirectly under [the GATT 1994]." Similarly, Article 26.1 of the DSU refers to "any benefit accruing to [a Member] directly or indirectly under the relevant covered agreement". Dictionary definitions of "benefit" include "an advantage, a good" and "pecuniary profit".[143] Additionally, dictionary definitions of "accrue" include "of a benefit or sum of money [, to] be received in regular or increasing amounts" and "arise or spring as a natural growth or result".[144] In principle, these definitions do not preclude that a benefit may "accrue" without being actually utilized.
>
> By protecting benefits that accrue "directly or indirectly", both Article XXIII:1(b) of the GATT 1994 and Article 26.1 of the DSU suggest a possibly broad scope for the term "benefit". Further, both Articles refer to "any" benefit. Given the dictionary definition of the word "any", these provisions might apply "no matter which, or what"[145] particular benefit is at issue. This would not support narrowing the term "benefit" to a specific manner of enjoyment or entitlement.[146]

5.16. The foregoing examination of the ordinary meaning of the relevant terms – albeit under separate provisions regarding non-violation claims – is indicative of the potential breadth of the benefits accruing under the covered agreements. However, this in itself does not answer the specific question of whether the claimed domestic losses are within the scope of benefits that are nullified or impaired by a WTO-inconsistency. Even under this broad definition, a "benefit" is an "advantage" that is received (or legitimately expected), and it is this "advantage" that is being nullified or impaired. The benefit that is nullified or impaired, thus, is conceptually distinct from the right from which it flows.[147] Canada and Mexico, in describing the *benefit* as "the national treatment for Canadian live cattle and hogs in the United States"[148] and "the right of not having to face a measure like the COOL measure"[149], effectively equate right with benefit. As we see it, the right in question is for imported products not to receive less favourable treatment than domestic products; the extent to which the advantage flowing from the right has been diminished is a separate question from what that right is. Thus, the right to national treatment under the covered agreements does not itself establish or prejudge the scope of benefits accruing therefrom.

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[142] See, e.g. Canada's and Mexico's responses to question No. 24.

[143] (footnote original) *Shorter Oxford English Dictionary*, 6th edn, A. Stevenson (ed.) (Oxford University Press, 2007), Vol. 1, p. 220.

[144] (footnote original) *Shorter Oxford English Dictionary*, 6th edn, A. Stevenson (ed.) (Oxford University Press, 2007), Vol. 1, p. 16. The latter definition adds that it is especially used in law "of the coming into existence of a possible cause of action".

[145] (footnote original) *Shorter Oxford English Dictionary*, 6th edn, A. Stevenson (ed.) (Oxford University Press, 2007), Vol. 1, p. 95.

[146] Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.682.

[147] See, e.g. Decisions by the Arbitrators, *US – Offset Act (Byrd Amendment) (Mexico) (Article 22.6 – US)*, paras. 3.20-3.32; and *EC – Bananas III (US) (Article 22.6 – EC)*, paras. 6.9-6.11.

[148] Canada's written submission, para. 96.

[149] Mexico's written submission, para. 57.

5.17. Moreover, we do not consider the phrase "directly or indirectly" to be a clear basis for distinguishing benefits accruing "directly" and those accruing "indirectly" so as to differentiate which losses are part of the nullification or impairment. Although the integral phrase "directly or indirectly" weighs against a narrow reading of "benefits", this does not necessarily extend the scope of nullification or impairment to other losses such as those caused, as is claimed here, by domestic price suppression. Indeed, both Canada and Mexico submit that domestic price suppression losses constitute the nullification or impairment of a benefit directly accruing to them, and in the alternative claim that such losses correspond to benefits accruing indirectly.[150]

5.18. Second, in terms of relevant context, we see a number of contextual provisions within the DSU as well as the SCM Agreement that weigh against reading "nullification or impairment of benefits" in the manner suggested by Canada and Mexico. We consider this context in interpreting the provisions of the WTO covered agreements in a coherent manner, giving meaning to all provisions harmoniously.[151] Articles 21.8 and 22.3(d)(ii) of the DSU, which are immediate context to Article 22.7, suggest that the consideration of domestic economic effects is distinct from measuring the nullification or impairment of benefits. Article 21.8 of the DSU applies to cases brought by developing country Members, and directs the DSB to "take into account" the "impact on the economy of developing country Members concerned". This provision (which has not been raised in these proceedings as a basis for including domestic price suppression losses) does not address the level of nullification or impairment that it is our mandate to assess under Article 22 of the DSU. In particular, the text of this provision suggests that it relates to a requirement imposed on the DSB to take into account specific factors "in considering what appropriate action might be taken". This does not concern arbitration under Article 22.6, but rather the DSB's discharge of its functions in Article 2.1 of the DSU regarding "the surveillance of implementation of DSB rulings and recommendations" that is the subject of Article 21 of the DSU.

5.19. Article 22.3(d)(ii) of the DSU addresses "principles and procedures" that complaining parties are required to apply among others "[i]n considering what concessions or other obligations to suspend", and provides that a "party shall take into account … the broader economic elements related to the nullification or impairment and the broader economic consequences of the suspension of concessions or other obligations". Crucially, this provision is relevant when assessing a request to cross-retaliate (i.e. across different sectors and agreements than those in which violations were found) and thus concerns the specific targets of the suspended concessions. Importantly for our analysis, it does not concern the *level* of that suspension based on the nullification or impairment of benefits.[152] Thus, while the DSU provides for consideration of domestic economic effects in specific contexts, it makes no indication of similar considerations being relevant to the level of nullification or impairment that it is our mandate to assess.

5.20. Furthermore, we note that the SCM Agreement makes it clear that "nullification or impairment" is a concept that is distinct from other adverse effects and, in particular, from domestic injury. Article 5 of the SCM Agreement sets out three distinct categories of "adverse effects", namely (a) injury to the domestic industry, (b) nullification or impairment, and (c) serious prejudice. Nullification or impairment is explicitly linked to the GATT 1994, with footnote 12 to Article 5 of the SCM agreement stipulating that "[t]he term 'nullification or impairment' is used in this Agreement in the same sense as it is used in the relevant provisions of GATT 1994, and the existence of such nullification or impairment shall be established in accordance with the practice of application of these provisions." Article 5 also makes clear that injury to domestic industry specifically encompasses the effect of "depress[ing] prices to a significant degree" or preventing

[150] See, e.g. Canada's written submission, para. 96-97; Mexico's response to Arbitrator question No. 24, para. 74.

[151] See Appellate Body Reports, *EC – Seal Products*, para. 5.123 (citing Appellate Body Reports, *US – Anti-Dumping and Countervailing Duties (China)*, para. 570; and *US – Upland Cotton*, paras. 549-550 (quoting Appellate Body Report, *Argentina – Footwear (EC)*, para. 81 and fn 72 thereto, in turn referring to Appellate Body Reports, *Korea – Dairy*, para. 81; *US – Gasoline*, p. 23; *Japan – Alcoholic Beverages II*, p. 12; and *India – Patents (US)*, para. 45)).

[152] For example, this provision was integral to the assessment of the arbitrator in *EC – Bananas III (Ecuador) (Article 22.6 – EC)* regarding Ecuador's request to resort to cross-retaliation, particularly in conjunction with the stipulation in Article 22.3(c) "that the circumstances are serious enough" to warrant suspension "under another covered agreement". That arbitrator was not addressing the inclusion of that broader economic impact in the calculation of the level of nullification or impairment, but rather whether that economic impact had been taken into account in Ecuador's request to suspend concessions under another agreement. Decision by the Arbitrators, *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, paras. 131-138.

price increases.[153] We consider it meaningful for our findings that the SCM Agreement explicitly distinguishes such domestic price suppression effects from nullification or impairment in the sense of the GATT 1994.[154]

5.21. Third, in addition to the contextual arguments above, we consider the preamble to the WTO Agreement, which the parties discussed at the substantive meeting. To the extent that the preamble sets out the "objectives" of the treaty, an initial point is that the term "objectives" is not to be conflated with the term "benefits". This is readily apparent from Article XXIII:1 of the GATT 1994, which refers separately to situations in which "any benefit … is being nullified or impaired" and those in which "the attainment of any objective of the Agreement is being impeded". We note that Article 22 of the DSU does not contain any reference to the objectives of the covered agreements being impeded, but only to nullification or impairment; by contrast, Article 26 of the DSU concerning non-violation and situation complaints is addressed to nullification or impairment *or* the attainment of any objective being impeded. Thus, the fact that domestic price suppression caused by a WTO-inconsistency may impede certain *objectives* of the Agreement does not mean that such price suppression is the nullification or impairment of a benefit under Article 22 of the DSU.

5.22. The preamble to the WTO Agreement makes clear in its first recital that trade relations are linked to domestic economic gains such as "raising standards of living, ensuring full employment and a large steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services".[155] In addition, the third recital of the preamble expresses the desire "of contributing to these objectives by entering into reciprocal and mutually advantageous arrangements directed to the substantial reduction of tariffs and other barriers to trade and to the elimination of discriminatory treatment in international trade relations".[156] Similarly, the fourth recital of the preamble expresses the fundamental resolution "to develop an integrated, more viable and durable multilateral trading system" on the basis of past trade liberalization and the results of prior trade negotiations. Thus, while the economic gains ultimately derived from trade are not limited to trade flows themselves, the WTO Agreement frames such broader economic gains as an end for which trade and market access are an essential means.

5.23. It is the interests of trade and market access that underlie Members' concessions and the legal remedies designed to safeguard those concessions. Hence, a "major goal for [Articles XXII and XXIII of the GATT 1994] was to provide a means for ensuring continued reciprocity and balance of concessions in the face of possibly changing circumstances."[157] Insofar as the rights and obligations under the covered agreements are grounded in a balance of *trade* concessions, the nullification or impairment of benefits is appropriately focused on the *trade* losses occasioned by a disruption of those concessions. Simply put, trade is a means to broader economic gains, and this trade is protected as a benefit accruing under the covered agreements.

5.24. In light of the foregoing, the fact that adverse effects may exist beyond trade losses does not necessarily imply their inclusion in the level of "nullification or impairment of benefits" under

[153] See Article 15.2 of the SCM Agreement. Footnote 11 to Article 5 of the SCM Agreement stipulates that "[t]he term 'injury to domestic injury' is used here in the same sense as it is used in Part V" regarding countervailing measures, which includes Article 15.2.

[154] It is notable that the SCM Agreement not only distinguishes domestic injury effects from nullification or impairment, but also creates a special rule for DSU arbitrators to account for those effects. Thus, the remedies for the "adverse effects" of actionable subsidies, set out in Article 7.10 of the SCM Agreement, direct arbitrators to "determine whether the countermeasures are commensurate with the degree and nature of the adverse effects determined to exist". This remedy in Article 7.10 of the SCM Agreement, which departs from the strict mandate of arbitrators under Article 22 of the DSU, comprises a "special or additional rule" that, pursuant to Article 1.2 and Appendix 2 of the DSU, prevails to the extent of any difference with other DSU rules and procedures.

[155] See also second recital of the preamble to the GATT 1994.

[156] See also third recital of the preamble to the GATT 1994.

[157] John H. Jackson, *World Trade and the Law of GATT* (Bobbs-Merrill Company, Inc., 1969), p. 170. See also Ibid. p. 246 (noting that an "assumption underlying trade negotiations is that concessions will be protected by the GATT general provisions relating to nontariff barriers"); and E-U. Petersmann, *The GATT/WTO Dispute Settlement System: International Law, International Organizations and Dispute Settlement* (Kluwer Law International, 1997), pp. 142-143 (describing the concept of nullification or impairment as serving "to protect the agreed tariff reductions as well as the reciprocal 'balance of concessions' from being undermined by non-tariff trade barriers or by other governmental measures").

Article 22 of the DSU. Indeed, it is readily conceivable that trade losses would result in corresponding domestic impacts – just as the trade disciplines of the WTO agreements are expected to foster domestic economic gains, such gains may be diminished or lost when there is a violation of those disciplines. This does not mean that all such losses may be rebalanced through suspension of concessions under Article 22 of the DSU. In the case of domestic price suppression, identifying the "net loss" suffered would raise an additional question of whether, and how, to account for positive effects for downstream consumers of the price-suppressed product in the domestic market.

5.25. At the same time, we are not persuaded that including domestic price suppression would require us to account for similar economic impacts in the domestic market of the objecting Member in order to ensure "an apples-to-apples determination of equivalency".[158] The equivalence requirement set out in Article 22.4 of the DSU applies to the equivalence of two *levels*, irrespective of how the concepts of "nullification or impairment" and "benefit" are interpreted. It is not for the Arbitrator to ascertain whether equivalence is maintained in the application of countermeasures. This would require the measurement of future losses as well as an examination of the nature of the concessions suspended, which Article 22.7 expressly prohibits us from considering.[159] Should the effect of the suspension of concessions exceed the level of nullification or impairment, whether due to the manner of application or the nature of concessions suspended, the Member concerned could have recourse to DSU procedures challenging the consistency of the level of the suspension with Article 22.4 of the DSU.[160]

5.26. Finally, all parties have referred to the proposal being considered by Members in the DSB Special Session as part of the "negotiations on improvements and clarifications" to the DSU.[161] This proposal concerns an amendment of Article 22.4 of the DSU to take into account the economic impact of the inconsistent measure on the economy of a developing country complainant.[162] Canada and Mexico note the differences between the original proposal under negotiation (regarding broader economic effects on developing countries) and the nature of their requests, which pertain to direct losses to a particular domestic industry.[163] We agree with Canada and Mexico that the proposal being discussed in the DSU negotiations provides little interpretive guidance for the question presented in this arbitration, including due to the substantive differences between the proposal itself and the particular losses claimed by Canada and Mexico. More generally, we are not persuaded by the United States' contention that negotiation of a given item necessarily proves that it does not exist under current DSU rules.[164] Proposals to clarify and improve existing DSU rules are without prejudice to Members' differing views[165] on the legal interpretation of the rules as they currently stand.

5.27. In conclusion, we consider that the relevant benefit in this case is the market access that has been nullified or impaired as a result of the COOL measure. Therefore, we do not include the domestic price suppression losses claimed by Canada and Mexico in the level of nullification or impairment of benefits. Consequently, we focus the remainder of our analysis on the claimed level of export revenue losses caused by the COOL measure.

5.2 Calculation of Lost Export Revenues

5.28. In this section, we assess the proposed level of suspension by reference to the level of nullification or impairment caused by the COOL measure, as calculated by Canada and Mexico in respect of export revenue losses. As noted above in section 3.1, Canada submits CAD 2,045

[158] United States' written submission, para. 127.
[159] Decisions by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, paras. 18-19; *US – 1916 Act (EC) (Article 22.6 – US)*, paras. 5.40-5.44 and 7.4; and *EC – Bananas III (Ecuador) (Article 22.6 – EC)*, para. 159.
[160] See Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, para. 82; see also para. 4.6 above.
[161] Doha Ministerial Declaration, WT/MIN(01)/DEC/1, para. 30.
[162] The particular amendment suggested was to add the following text after the current provisions of Article 22.4: "If the case is one brought by a developing country Member, the level of nullification and impairment shall also include an estimate of the impact of the inconsistent measure on the economy of such Member." TN/DS/26, para. 819.
[163] See Canada's written submission, para. 99; Mexico's written submission, para. 80.
[164] See United States' written submission, paras. 123-125.
[165] See TN/DS/26, paras. 819-832.

million and Mexico USD 514.8 million in export revenue losses. To calculate the export revenue losses caused by the COOL measure, Canada and Mexico separately estimate impacts on export prices and quantities, which we address accordingly in separate sections below.

5.29. We observe that Canada and Mexico principally rely on econometric analysis, specifically linear regression analysis, in their respective methodologies for calculating the impact of the COOL measure. As noted above, in addition Canada relies on a descriptive analysis to estimate the impact of COOL on prices for feeder pigs, and Mexico relies on an elasticity simulation to estimate the impact of COOL on quantities of feeder cattle exported to the United States.[166]

5.30. As regards econometric analysis, we recall that the original and compliance panels in these disputes examined economic and econometric evidence submitted in connection with the legal claims raised in respect of the original and amended COOL measure's detrimental impact on imported livestock. As stated by both panels, it was not necessary to verify actual trade effects to dispose of the national treatment claims before them, and the review of such evidence was pursuant to the function of panels to make an objective factual assessment under Article 11 of the DSU. Further, the original panel emphasized that this assessment did not concern "any level of nullification or impairment, let alone whether there is any equivalence with any suggested level of suspension of concessions or other obligations", as these were matters "to be decided by an eventual arbitration under Article 22.6 of the DSU and on the basis of evidence submitted in the context of such arbitration".[167]

5.31. Given the prominence of econometrics in these proceedings, we briefly set out a background explanation of the main features of this methodology. Essentially, in a linear regression analysis, a "dependent" variable (that is, the variable of interest) is modelled as a linear function of a number of "explanatory" variables. These explanatory variables ideally represent the full set of factors that have an impact on the dependent variable, and therefore contribute to "explaining" the behaviour of the dependent variable. In general, the explanatory variables are assumed to be independent with respect to the dependent variable. In other words, the dependent variable is assumed to have no impact (direct or indirect) on the explanatory variables that, in turn, have an impact on the dependent variable.

5.32. For each explanatory variable included in the econometric model, a specific parameter is attached to it. This parameter represents the impact that the associated explanatory variable might have on the dependent variable. Thus, when the econometric model is well specified with all relevant explanatory variables, each parameter isolates the impact of the associated explanatory variable on the dependent variable.[168] In their methodologies, Canada and Mexico use parameters associated with the COOL measure to calculate what the export price (and quantity, for Canada) of livestock would have been *without* the combined effect of the original and amended COOL measure.

5.33. While we note the United States' broad contention that econometric modelling is unsuitable for accurately estimating the impact of the COOL measure, principally due to the alleged impossibility of accurately accounting for all relevant variables, we also note that arguments regarding the fundamental flaws or unsuitability of econometric modelling to estimate trade effects cannot be assessed in the abstract.[169] We therefore assess Canada and Mexico's proposed levels of suspension by examining the specific application of their methodologies in determining the level of nullification or impairment caused by the COOL measure.

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[166] These two different methodologies will be elaborated upon in greater detail below. See sections 5.2.1.3 and 5.2.2.2 below.

[167] See Panel Reports, *US – COOL*, paras. 7.438-7.453; *US – COOL (Article 21.5 – Canada and Mexico)*, para 7.183.

[168] In addition to the explanatory variables, an econometric model includes an error term, also known as the "residual" term, to capture the facts that no matter how well the model is specified: (i) it is often impossible to account for every factor that has an impact on the dependent variable; (ii) the actual relationship between the dependent variable and (some of) the explanatory variables may not be necessarily linear; (iii) data may suffer from measurement errors; and (iv) unpredicted – stochastic – effects can affect the dependent variable.

[169] See United States' opening statement at the meeting of the Arbitrator, paras. 27-40; United States' written submission (Canada), para. 101-102; United States' written submission (Mexico), paras. 73-74.

5.2.1 Price impact estimation

5.2.1.1 Use of price basis to estimate the COOL impact on export prices

5.34. As stated in section 3.1, for their computation of export revenue loss, Canada and Mexico rely on an econometric estimation of the impact of the COOL measure on "price basis".[170] The price basis is the differential between the price of Canadian/Mexican exported livestock and the price of US-origin livestock. Thus, Canada and Mexico do not directly estimate the impact of the COOL measure on the absolute level of export prices; rather, they equate the absolute price impact with the degree to which the COOL measure has widened the price basis (i.e. increased the difference between the export price and the US price) to the detriment of foreign-origin livestock.

5.35. Before addressing the parties' arguments, we note that Canada and Mexico define the price basis differently. Canada defines the price basis as the difference between the export price of Canadian livestock in Canada and the price of United States' livestock in the United States[171], while Mexico defines the price basis as the difference between the price of exported Mexican livestock in the United States and the price of United States' livestock in the United States.[172] In other words, Canada compares the price of livestock in two different countries (i.e. Canada and the United States), while Mexico compares the price of livestock in the same country (i.e. the United States).

5.36. In this Decision, reference to the "export price" means the price of Canadian and Mexican livestock as defined in their respective methodologies, unless specified otherwise. Additionally, reference to the "US price" means the price of comparable livestock of US-origin within the United States.

5.2.1.1.1 Arguments of the parties

5.37. The United States challenges the Canada's and Mexico's use of the price basis, rather than the actual export price, to estimate lost export revenue.[173] The United States argues that if Canada's and Mexico's "export equations had all the proper exogenous variables then [they] could have used those same exogenous variables to explain the [effect on Canadian and Mexican] prices directly rather than just through a price basis analysis."[174] The United States notes, however, that because livestock prices have increased during the relevant period, applying the same exogenous variables that Mexico and Canada used in their analyses would show that the COOL measure actually caused higher prices.[175] According to the United States, this demonstrates the "flaws" (in respect of Mexico), or "limited explanatory value" (in respect of Canada), of a price basis regression.[176]

5.38. According to the United States, Canada's and Mexico's model specifications of the price basis also prevent them from distinguishing between the impacts of the COOL measure on the Canadian/Mexican livestock export price and on the United States' livestock price.[177] The United States asserts that the price basis "includes more than the change in Canadian or Mexican price – it naturally also relates to fluctuations up and down in the U.S. price and the rate of these

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[170] Canada's methodology paper, Sumner Study, para. 13; Mexico's methodology paper, Pouliot Study, p. 14.

[171] See, e.g. Canada's response to Arbitrator question No. 6, para. 18 ("Canada uses prices in Canada (rather than those within the United States) for estimating price basis impacts because those data ensure that the econometric specification used by Canada most accurately estimates the impact of the amended COOL measure on the prices of livestock in Canada.").

[172] See, e.g. Mexico's opening statement at the meeting of the Arbitrator, para. 15 ("The estimate of the COOL measure's impact on the price of Mexican feeder cattle exported to the United States uses a basis calculated as the difference in the price of Mexican feeder cattle measured in the United States and the price paid for U.S. feeder cattle in the United States.").

[173] See United States' response to Arbitrator question No. 5.

[174] United States' written submission (Canada), para. 104; United States' written submission (Mexico), para. 75.

[175] United States' written submission (Canada), para. 104; United States' written submission (Mexico), para. 75; United States' response to Arbitrator question No. 35, para. 8.

[176] United States' written submission (Canada), para. 104; United States' written submission (Mexico), para. 75.

[177] United States' written submission (Canada), para. 107; United States' written submission (Mexico), para. 78.

changes. This difference between two prices cannot be automatically equated with the price level for exports of Canadian and Mexican livestock."[178] Because the widened price basis may be due to increased US prices, and not just declining import prices, "[u]sing the price basis for determining the actual trade impact of COOL will overstate the price effect."[179]

5.39. The United States supports its assertion that the COOL measures increased the price of United States' livestock through reliance on economic logic, academic research, and data showing that "U.S. prices for U.S. origin livestock have consistently increased following the implementation of the COOL measures".[180] The United States also refers to its own application of Canada's "price model specification and weekly data to review the U.S. price levels … [to show] that the impact of the original and amended COOL measures on the U.S. price is in fact positive."[181]

5.40. In order to show that a change in the price basis is not equivalent to a change in actual price, the United States notes the definitional and mathematical distinction between the two concepts. Based on this distinction, the United States asserts that, "[i]n principle, any change in the U.S. price will result in a change in the price basis unless it is exactly offset by a change in the Canadian or Mexican export price."[182] The United States provides data showing volatility in the Canadian-United States' price basis over time and suggests that "if Canada's argument that the basis (i.e., difference between the U.S. and Canadian) prices remained steady over time, until the amended COOL measure expanded the basis, we would expect the basis described by the line to be flat during this period, rather than wildly fluctuating."[183] According to the United States, this makes it "clear [that] other causal factors have affected the basis, and they need to be accounted for in econometric modeling".[184] The United States also argues that "sample econometric analysis conducted by the United States based on the equations and data provided by the requesting parties supports the understanding that price level change and price basis are not equivalent."[185]

5.41. Canada argues that the use of a price basis specification "allows one to capture parsimoniously the impacts of a host of variables that may affect livestock prices in both countries in a similar way."[186] Canada thus suggests that the use of a price basis obviates the need to account for any and every variable that might impact the price of livestock in the United States' and Canadian markets.[187] Canada submits that the "positive theoretical impact of the amended COOL measure on U.S. price through reduced import competition will be small because the share of imports is so small", and that any "small positive impact of the domestic impacts of COOL on the U.S. price is countered by small negative effects on U.S. prices", as reported in a study of US domestic effects.[188]

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[178] United States' closing statement at the meeting of the Arbitrator, para. 6. See also United States' written submission (Canada), para. 107; United States' written submission (Mexico), para. 78.

[179] United States' response to Arbitrator question No. 5, para. 28. See also United States' written submission (Canada), para. 107; United States' written submission (Mexico), para. 78.

[180] United States' response to Arbitrator question No. 32, paras. 2-5.

[181] United States' response to Arbitrator question No. 32, para. 5 (citing Sample Econometric Analysis and Data, (Exhibit USA-61)). In this Decision, exhibits submitted by Canada are referred to as CAN-#; exhibits submitted by Mexico are referred to as MEX-#; and exhibits submitted by the United States are referred to as USA-#.

[182] United States' response to Arbitrator question No. 33, para. 7.

[183] United States' response to Arbitrator question No. 33, para. 7.

[184] United States' response to Arbitrator question No. 33, para. 7.

[185] United States' response to Arbitrator question No. 33, para. 8.

[186] Canada's written submission, para. 35.

[187] Canada's written submission, para. 35.

[188] Canada's written submission, para. 36 (citing S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014), (Exhibit USA-35), pp. 107-116; G. Tonsor, T. Schroder, and J. Parcell, "Economic Impacts of 2009 and 2013 U.S. Country-of-Origin Labeling Rules on U.S. Beef and Pork Markets", Project Number AG-3142-P-14-0054 R0, Final Report submitted to the USDA Office of the Chief Economist, (26 January 2015) (Exhibit MEX-2, Appendix A to Appendix 15)).

The study by Tonsor, Schroder, and Parcell was a project funded by the USDA Office of the Chief Economist containing the professional opinions of the principal investigators and not those of the USDA or the Office of the Chief Economist. The material and conclusions of this study are discussed in the Report to Congress of April 2015 by the USDA Office of the Chief Economist, entitled "Economic Analysis of Country of Origin Labeling (COOL)" and submitted in these proceedings as Exhibit MEX-2, Appendix 15. The study by

5.42. Canada also responds to evidence submitted by the United States to support the contention that a change in price basis is not equivalent to a change in export price levels. Canada notes that the United States' evidence of volatility in the price basis over time is "irrelevant" because "Canada has never taken the position that there are no fluctuations in the price basis … [and] Canada never argued that the basis remained steady over time before or after COOL."[189] Canada contends that the United States' evidence provides "no guidance about the causation related to the amended COOL measure … [whereas] Canada's price basis regressions account for most of this variation and specifically isolate the causal effect of COOL on the price basis."[190] Canada criticizes the United States' use of Canada's econometrics for "cherry-picking" a single animal category and for "mis-specifying" the equations.[191] Canada also criticises the United States' "sample econometric analysis" for relying on parameters acknowledged to be flawed, and confusing the units of measurement.[192]

5.43. Mexico submits that the "objective of Mexico's regression model is to explain how the differential treatment of cattle in the United States, according to their origin, affected the price paid for Mexico feeder cattle."[193] Mexico asserts that the price basis measures "only the difference in value to the US feeding operations for feeder cattle of Mexican and US origins."[194] The use of price basis rather than price explains the differential impact, especially because, "[w]ith prices measured in the same locations, the number of variables that affect the basis is limited."[195] Mexico adds that, while the methodology could be applied to the actual "price paid", such a model "would be plagued with problems that the [price] basis regression does not have."[196]

5.44. Regarding any potential COOL-related price increase in the United States, Mexico notes that such an "increase in … price … would be small in practice because the market share of imported cattle is small relative … to the total size of the U.S. domestic cattle and beef industry", and change in import volume caused by the COOL measure is an even smaller share of the US market.[197] Additionally, according to Mexico, the arbitrage mechanism in the integrated Northern American livestock market ensures that the "difference between the two prices reflects exactly the costs associated with the COOL measure that [are] passed on to Mexican feeder cattle."[198] Additionally, regarding the United States' evidence of non-equivalence between change in price basis and change in price, Mexico suggests that the regression model submitted by the United States for this purpose does not address Mexico's model[199], and is "mis-specified" for failing to include US cattle prices as an explanatory variable and for incorrectly applying a first difference to the COOL variables.[200] Mexico also argues that the short-run volatility in the price basis, as identified by the United States, is normal and is accounted for through Mexico's long run econometric regression.[201]

5.2.1.1.2 Analysis by the Arbitrator

5.45. We begin by recalling the methodological background against which Canada and Mexico apply their estimates of the COOL impact on price basis. Canada and Mexico quantify the level of

Tonsor, Schroder, and Parcell is attached as Appendix A to the Report by the USDA Office of the Chief Economist, and is referred to in this Decision as "Tonsor et al. (2015)".

[189] Canada's comments on the United States' response to Arbitrator question No. 33, para. 21.
[190] Canada's comments on the United States' response to Arbitrator question No. 33, para. 21.
[191] Canada's comments on the United States' response to Arbitrator question No. 33, paras. 24-25.
[192] Canada's comments on the United States' response to Arbitrator question No. 33, paras. 26-29.
[193] Mexico's written submission, para. 45.
[194] Mexico's methodology paper, Pouliot Study, p. 8.
[195] Mexico's written submission, para. 45.
[196] Mexico's written submission, para. 45.
[197] Mexico's written submission, para. 48.
[198] Mexico's written submission, para. 49. See also Mexico's opening statement at the meeting of the Arbitrator, para. 25 ("The United States also made an argument that somehow the Mexican methodology relating to the price basis does not account for increases in U.S. prices. But since Mexico's price basis model only examines the difference between prices for Mexican cattle and U.S. cattle when sold within the United States, this U.S. argument does not make sense."); Mexico's comments on the United States' response to Arbitrator question No. 33, para. 18 ("Because the North American livestock market is integrated, the change in the basis equals the COOL discount for Mexican feeder cattle compared to U.S. feeder cattle.").
[199] Mexico's comments on the United States' response to Arbitrator question No. 33, para. 2 (second bullet).
[200] Mexico's comments on the United States' response to Arbitrator question No. 33, para. 21.
[201] Mexico's comments on the United States' response to Arbitrator question No. 33, para. 20.

nullification or impairment as an expression of lost export revenue, which is defined as the export price (*P*) multiplied by the associated export volume (*Q*). It follows that a change (*Δ*) in export revenue is defined as the change in the product of export price and export volume (*Δ(PQ)*). For the purpose of this arbitration, Canada and Mexico propose to compare two terms: (1) export revenue observed in the baseline period with the COOL measure in place and (2) export revenue that would have been obtained in the absence of the COOL measure. Thus, the difference between the revenue "with" and "without" the COOL measure represents the export revenue loss caused by the COOL measure. In this context, Canada and Mexico demonstrate that the expression of export revenue loss can be decomposed into three components, where *P* and *Q* represent export prices and quantities in absolute values in the baseline period, and *ΔP* and *ΔQ* represent the counterfactual change in export prices and quantities without the COOL measure[202]:

$$\Delta(PQ) = \Delta PQ + \Delta QP - \Delta P \Delta Q$$

5.46. Canada and Mexico note that while data on the export price (*P*) and export quantities (*Q*) in absolute levels in the baseline period are readily available, there are no directly available data for the two differential terms, *ΔP* and *ΔQ*, measuring respectively the change in export price and export quantity between the baseline period with the COOL measure and a counterfactual situation without the COOL measure. Both Canada and Mexico propose to estimate separately the counterfactual change in export prices (*ΔP*) and export volumes (*ΔQ*) in the absence of the COOL measure.

5.47. While the change in export price of livestock in absolute terms is one of the key components of the expression of export revenue losses, Canada and Mexico econometrically estimate the impact of the COOL measure on the price basis (rather than on the absolute price level). Both Canada and Mexico interpret the estimated coefficients of the COOL measure in the price basis specification as the impact of the COOL measure on the export price. In other words, the methodologies of Canada and Mexico rest on the assumption that the counterfactual impact of the COOL measure on the price basis is the same as the counterfactual impact on the Canadian/Mexican export price.

5.48. As submitted by the United States, there is a basic definitional and mathematical difference between absolute export price levels and price basis differentials.[203] For example, a change in price basis can be represented as follows:

$$\Delta(\text{US Price} - \text{Export Price}) = \Delta(\text{US Price}) - \Delta(\text{Export Price})$$

In support of its contention that the change in price basis should not be equated with a change in export price, the United States adduces the following illustration:

$$\Delta(\text{US Price}) - \Delta(\text{Export Price}) \neq \Delta(\text{Export Price})$$

5.49. This illustration reflects two key considerations about the use of price basis to estimate the impact of the COOL measure on export prices and, by extension, export revenues. One consideration concerns the irrelevance of variables that have the same impact on US and export prices. A second consideration concerns the conditions under which price basis analysis would yield an accurate measure of an explanatory variable's impact on the export price.

5.50. Regarding the first consideration, it is clear that any variable that has an equivalent effect on the US price and the export price of livestock will have no effect on the price basis. In other words, if a given variable increases or decreases the export and US price by the same amount, the differential between the prices will remain the same. Indeed, this is a fundamental premise of Canada's and Mexico's defence of the use of price basis for the econometric estimation of the COOL impact on export price levels. Because price basis only changes when a variable differentially affects the export and US price, Canada and Mexico argue that the price basis

[202] Canada's methodology paper, Sumner Study, expression (3); Mexico's methodology paper, Pouliot Study, expression (2).

[203] See United States' response to Arbitrator question No. 33, para. 7. The equations reproduced here are modified to refer to export prices generally rather than solely from Canada as in the United States' illustration.

equations only need to account for a limited number of variables that have such a differential impact.

5.51. While it is mathematically apparent that variables with an equal impact on export and US prices do not affect the price basis, the implications of this fact in the present case relate to the specific context of the North American livestock market. As noted in the original proceedings of these disputes, the market for livestock (and meat) of Canada, Mexico, and the United States is highly integrated, with different stages of livestock and meat production often being performed in more than one country.[204] Moreover, the vast majority of Canadian and Mexican livestock exports is destined for the United States, although imports from Canada and Mexico account for only a small percentage of total livestock slaughter in the United States.[205]

5.52. A consequence of this integrated market is that livestock producers will sell their livestock wherever they are able to realize the highest return. In theory, such arbitrage conditions operate to establish a "law of one price", according to which a product is sold for the same price in all locations – when prices differ within the market, arbitrage operates to equalize the price difference between locations.[206]

5.53. This is not to say that the markets of Canada, Mexico, and the United States are perfectly integrated. Indeed, the fact that there is a price differential between products of different origin indicates that there are certain factors leading to a departure from the theoretical "law of one price". The statistical volatility of the price basis observed by the United States does not itself contradict the notion that North American livestock markets are highly integrated. Rather, fluctuation in the price basis over time is consistent with the premise that there are certain factors differentially impacting livestock prices, and that market frictions may impede instantaneous adjustment to economic changes.[207] At the same time, there is evidence that North American prices generally move together along the same trends, notwithstanding the existence of a differential between prices of livestock from different origins.[208] For instance, the correlation between the US price and Canadian export price of livestock is extremely high and ranges between 0.95 and 0.98 for feeder/fed cattle, and is 0.98 for hogs.[209] Similarly, the correlation between the US price and Mexican export price of feeder cattle is characterized by a high correlation of 0.98.[210]

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[204] See Panel Reports, *US – COOL*, para. 7.140. See e.g., F. Adcock et al., "The Global Competitiveness of the North American Livestock Industry", *Choices*, Vol 21(3) (2006), (Exhibit MEX-32), pp. 171-176; R. Clemens, "Integration in the North American Livestock and Meat Industries", *Iowa Ag Review*, Vol. 9 (Summer 2003), (Exhibit MEX-33), pp. 8-9; W. Hahn et al., "Market Integration of the North American Animal Products Complex", *Report from the Economic Research Service (USDA)*, LDP-M-131-01 (May 2005), (Exhibit MEX-34); and R. Jurenas, "Country-of-Origin-Labeling for Foods", *Congressional Research Service*, (15 July 2010), (Exhibit MEX-35).

[205] See Panel Reports, *US – COOL*, para. 7.142; parties' responses to Arbitrator question No. 31.

[206] More specifically, "[a]rbitrage implies that profit-seeking traders will ship the commodity from a low-price exporting region to a high-price imported region if the price difference exceeds the marginal transportation and handling costs". J. Vercammen, *Agricultural Marketing: Structural Models for Price Analysis* (Routledge, 2011), (Exhibit MEX-31), p. 15. With specific regard to Canadian livestock, see US and Canada Weekly Hog Prices, (Exhibit CAN-89) and US and Canada Weekly Cattle Prices, (Exhibit CAN-91) reflecting the parallel movements in prices of Canadian and US cattle and hogs. For such Canadian livestock, this process is described as follows:

> As long as trade in meat and livestock is relatively free and open, Canadian pricing is going to be determined at the macro level through global and U.S. markets. If Canadian prices move either too high or too low relative to the U.S. or other markets, supplies will either move into or out of Canada, rapidly. This rapid movement of livestock or meat supplies due to price differentials will effectively erase those differentials. K. Grier, "Livestock Price Discovery In Canada", (George Morris Centre, October 2010), (Exhibit CAN-86), p. 2.

See also Agricultural Marketing Guide: Alberta Agriculture and Forestry, "Economics and Marketing: Predicting Feeder Cattle Prices", (Exhibit CAN-90).

[207] The compliance panel in these disputes noted that "it is not possible to fully appreciate the implications of the volatility of the price basis by simply looking at its evolution over time. Failing to consider the set of factors underlying the evolution of the price basis could in fact lead to misleading inferences." Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.172.

[208] See US and Canada Weekly Hog Prices, (Exhibit CAN-89) and US and Canada Weekly Cattle Prices, (Exhibit CAN-91); Mexico's methodology paper, Pouliot Study, p. 12 (figure 3).

[209] See Weekly Cattle Data used for regressions with variables, (Exhibit CAN-68) and Weekly Hog Data used for regressions with variables, (Exhibit CAN-69). The correlation of feeder/fed cattle prices is computed for the period September 2005 – January 2015, while the correlation of fed hog prices is computed for the

5.54. It is in this light that examination of changes in the price basis becomes relevant to assessing the impact of factors such as the COOL measure. In particular, price basis represents the price gap between livestock in the United States and comparable animals from Canada or Mexico that is due to trade costs, including transport costs and technical barriers to trade. For this reason, price basis analysis is a standard way of measuring trade costs caused by non-tariff measures.[211] In addition, the key methodological advantage of focusing on price basis is to restrict the set of relevant variables to those that, like the COOL measure, have a differential impact on livestock prices.

5.55. We turn to the second consideration regarding use of price basis to estimate the impact of the COOL measure on export prices, namely the conditions under which price basis analysis would yield an accurate measure of the change in export price. To accurately measure the *negative* COOL impact on exports, we agree with the United States that the parameter estimates of the COOL measure should not capture any increase in US prices caused by the COOL measure. Any such increase would attribute a widening of the price basis to the COOL measure in calculating export revenue losses, even though this would not actually correspond to (and in fact would overstate) the negative impact on export prices. In this regard, we agree with the United States' assertion that, "[i]n principle, any change in the U.S. price will result in a change in the price basis unless it is exactly offset by a change in the Canadian or Mexican export price."[212]

5.56. In this case, however, as we explain below, we do not find convincing evidence that the COOL measure led to increased US livestock prices. Therefore, we do not accept the United States' contention that price basis regression overestimates the reduction in export prices caused by the COOL measure. We note the United States' explanation that the COOL measure increased the price of United States' livestock based on the economic logic that "[t]he increased costs associated with the original and amended COOL measure result in decreased U.S. demand, as well as decreased Canadian and Mexican exports of livestock to the United States. This in turn results in an increase in the U.S. price of livestock."[213] We find it useful to examine these contentions in the context of the findings adopted in previous stages of these disputes relating to the discriminatory impact of the COOL measure.

5.57. With regard to the COOL impact on US demand, we recall the findings in the original and compliance stages regarding how the costs of the COOL measure are borne in the US market. The panels in both the original and compliance stages of these disputes found that the costs of the COOL measure could not be fully passed on to consumers, largely based on the USDA's own assessments that there was little evidence of consumer willingness to bear price increases commensurate with the added costs of mandatory labelling.[214] The additional costs imposed by the COOL measure were thus largely passed up the supply chain to producers, for whom the least costly business scenario was to process meat from exclusively domestic livestock.[215] Given this incentive to use exclusively US-origin livestock, we see evidence for a "decreased US demand" for Canadian and Mexican imported livestock that would be reflected in a widened price basis caused

period December 2003 – January 2015. Both computations transform Canadian prices to USD for purposes of comparison.

[210] See Weekly Texas and New Mexico Feeder Cattle Prices, (Exhibit MEX-2, Appendix 1) and Price of Mexican Feeder Cattle Exported to the United States, (Exhibit MEX-2, Appendix 2). The correlation of feeder cattle prices is computed for the period January 2003-December 2014.

[211] See, e.g. UNCTAD-WTO, "A practical guide to trade policy analysis", p. 73 available at https://www.wto.org/english/res_e/publications_e/practical_guide12_e.htm, or WTO World Trade Report 2012, p. 137.

[212] United States' response to Arbitrator question No. 33, para. 7.

[213] United States' response to Arbitrator question No. 32, para. 2.

[214] See Panel Reports, *US – COOL*, paras. 7.352-7.356; *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 7.159-7.162. See also 2009 Final Rule, pp. 2682 ("Current evidence does not suggest that United States producers will receive sufficiently higher prices for United States-labeled products to cover the labelling, recordkeeping, and other related costs.") and 2690 (indicating "the assumption that COOL will not change consumers' preferences for the covered commodities" and that "the suppliers of the covered commodities will still bear direct implementation costs"); USDA Office of the Chief Economist, Report to Congress, "Economic Analysis of Country of Origin Labeling (COOL)" (April 2015), (Exhibit MEX-2, Appendix 15), p. 8 ("while there is evidence indicating consumer interest in COOL information, the evidence does not support a conclusion that COOL significantly increases consumer demand even though consumers desiring such information benefit from its provision").

[215] See Panel Reports, *US – COOL*, para. 7.357; *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.157.

by the COOL measure.[216] In light of this, it is not clear that the "decreased US demand" referred to by the United States in these proceedings would bias an interpretation of a widened price basis as a decrease in the export price of livestock.

5.58. The United States further suggested at the meeting with the Arbitrator that added regulatory compliance costs associated with the COOL measure could be expected to lead to price increases for US livestock. In the case of the COOL measure, we understand such costs to refer to modifications of production facilities, labelling capacities, and other fixed costs, as outlined in the regulatory impact analysis of the 2009 Final Rule.[217] Even assuming that it were shown that such costs increased the price of livestock, we note that costs of this nature would be non-discriminatory in that they would be incurred (and potentially passed upstream to livestock producers) independently of the particular origin of the livestock used.[218] In a price basis analysis, such non-discriminatory costs would not necessarily have any impact on the price basis and, thus, would not result in any overestimation of the COOL measure's negative impact on export prices.

5.59. With regard to the effect of decreased Canadian and Mexican exports of livestock to the United States, we recall that an important feature of the North American livestock market is the relative size of US production and demand in relation to the livestock exports of Canada and Mexico.[219] It is uncontested in these proceedings that the share of livestock imports within the US market remains small and within the ranges reported in earlier phases of these disputes.[220] For example, the total US livestock slaughter in the baseline year of 2014 was 30.859 million head of cattle.[221] In the same year, imports of Canadian feeder and fed cattle comprised approximately 3 per cent of total US cattle slaughter[222], and Mexican feeder cattle comprised approximately 4 per cent of total US cattle slaughter.[223] Imports of Canadian feeder pigs and fed hogs comprised approximately 5 per cent of the total US slaughter of 106.879 million head of hogs.[224] The small share of Canadian and Mexican imports compared to total US slaughter is consistent with the premise that "[t]he dominant factors in the US market are conditions that surround livestock of US origin".[225] The small import share is also consistent with nearly perfect import demand elasticities within the United States[226], with the result that exporters of livestock to the United States are "price-takers" according to US import demand. It follows from high import demand elasticities that

[216] This was evidenced by exporters of livestock to the United States being required to bear differential costs by accepting discounts or discontinued processing by US firms seeking to comply with the segregation and verification requirements of the COOL measure. See Panel Reports, *US – COOL*, paras. 7.373-7.381; Appellate Body Reports, *US – COOL*, para. 289.

[217] See 2009 Final Rule, pp. 2684-2685 (referring to relevant "cost drivers" as including "individual package labels or other point-of-sale materials", "additional retail labor and personnel training", "[m]odification of existing recordkeeping systems", and the need for packers and processors "to separate shifts for processing products from different origins, or to split processing within shifts, or to alter labels"). See also 2013 Final Rule, pp. 31378 and 31382 (referring to "two primary cost drivers" from the amended COOL measure as augmentation of the label and adjustment to the elimination of commingling, with "initial adjustment costs … expected to fall over time").

[218] Notably, the 2009 Final Rule regulatory impact analysis assumed that "domestic and foreign suppliers of the covered commodities located at the same level or segment of the supply chain face the same percentage increases in their operating costs". See 2009 Final Rule, p. 2690.

[219] The original panel in these disputes observed in relation to the small share of imports that "US livestock demand cannot be fulfilled with exclusively foreign livestock" in reaching its conclusion that there was an incentive to process exclusively domestic livestock. Panel Reports, *US – COOL*, para. 7.349. See also Appellate Body Reports, *US – COOL*, paras. 287 and 345.

[220] See parties' responses to Arbitrator question No. 31; Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.157.

[221] See Market Share Data, (Exhibit USA-51), tabs 1 and 2 (providing data from the USDA National Agricultural Statistics Service).

[222] Canada's response to Arbitrator question No. 31, para. 88; Market Share Data, (Exhibit USA-51), tab 2.

[223] Market Share Data, (Exhibit USA-51), tab 1. We note that Mexico calculates 9.25 per cent as the import share of "total placement of feeder cattle" using the National Feeder & Stocker Cattle Receipts worksheets from the Livestock Marketing Information Center. Mexico's response to Arbitrator question No. 31, para. 87 and Import share of Mexican feeder cattle, (Exhibit MEX-23).

[224] Canada's response to Arbitrator question No. 31, para. 91; Market Share Data, (Exhibit USA-51), tab 3.

[225] S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014), (Exhibit USA-35), p. 109.

[226] S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014), (Exhibit USA-35), p. 110.

any decrease in import quantities would result only in a very small (if any) increase in the prices set according to conditions within the US market.[227]

5.60. Thus, while it is theoretically possible that a trade-restrictive measure could lead to higher prices in the importing country in addition to lower prices in the exporting country, we do not find compelling evidence that this has been the case with respect to the COOL measure in the US livestock market. Indeed, we note that there are indications that the COOL measure may have even led to decreased livestock prices within the United States. In a study on the changes in economic welfare of US consumers, producers, processors, and retailers resulting from the implementation of the (original and amended) COOL measure, the results of a multiple-sector EDM for beef, pork, and poultry sectors conclude that the COOL measure *reduced* the US price of feeder cattle, as well as slaughter (fed) cattle and hogs.[228]

5.61. Finally, we note the parties' agreement that there are a series of statistical problems that arise in attempting to econometrically estimate the impact of the COOL measure on actual prices.[229] Canada and Mexico explain that such a specification would require inclusion of a large number of explanatory variables, for many of which data are not available.[230] Additionally, they acknowledge that such a specification faces certain statistical issues. In particular, they submit that some explanatory variables suffer from unit root problems (i.e. they are non-stationary)[231] or may be endogenous variables (i.e. those that are themselves impacted by the dependent variable).[232] In light of this, our conclusion is not altered by the fact that specifications using absolute prices indicate that the COOL measure increased US prices. The United States characterizes as "mis-specified" the very same price model it uses to yield such results.[233] The upward trend of livestock prices underscores the need for a methodology that is capable of isolating the negative effect of the COOL measures amidst the multiplicity of factors that may have contributed to overall price increases. As demonstrated by the United States itself, an econometric analysis of absolute price levels is inadequate for this purpose.

5.62. In sum, we consider that the COOL measure's impact on the price basis is an appropriate measure of its impact on Canadian and Mexican export prices. We note that the object of Article 22.6 proceedings is to ascertain the level of nullification or impairment, and Canada's and Mexico's use of price basis is suitable for this purpose under the specific circumstances of this case. The COOL measure is a factor that, as found in prior stages of these disputes, differentially impacts the competitive opportunities (and prices) of livestock from different origins as compared

[227] See, e.g. Canada's comments on the United States' response to Arbitrator question No. 32, paras. 4-7; Mexico's written submission, para. 48.

[228] See USDA Office of the Chief Economist, Report to Congress, "Economic Analysis of Country of Origin Labeling (COOL)" (April 2015), (Exhibit MEX-2, Appendix 15), p. 10 and Table 3 (showing a long term *reduction* in the prices of feeder and fed cattle, and fed hogs, in contrast to the results of the 2009 Final Rule regulatory impact analysis). See also Tonsor et al. (2015), pp. 57, 59-60, 67-68, Table exhibit 5.1, and Table exhibit 6.1. See also Canada's comments on the United States' response to Arbitrator question No. 32, para. 8.

[229] United States' written submission (Canada), para. 104; United States' written submission (Mexico); para. 75; Canada's response to Arbitrator question No. 34, para. 98 ("[I]t is not possible to reliably estimate the impact of the amended COOL measure on the export price of Canadian cattle and hogs without estimating the specification with the price basis as the dependant variable."); Mexico's response to Arbitrator question No. 5(c), para. 17 ("It would not be possible to estimate Mexico's lost export exports revenues by specifying a model with the actual export price as the dependent variable.").

[230] United States' written submission (Canada), para. 104; United States' written submission (Mexico); para. 75; Canada's response to Arbitrator question No. 34, para. 102; Mexico's response to Arbitrator question No. 5(c), para. 19.

[231] Canada's response to Arbitrator question No. 34, para. 104; Mexico's response to Arbitrator question No. 5(c), paras. 25-26. The concept of unit root refers to the non-stationarity property of a given variable that can alter the consistency of the parameters' estimation. Standard statistical inference assumes that the dependent and independent variables included in a linear regression model are stationary in order to obtain consistent estimates (i.e. estimates that converge to the true values as the number of observations increases). In the presence of explanatory variable(s) with a unit root, their respective estimates have been shown to be biased when the dependent variable is stationary. When the dependent variable and the explanatory variable are both characterized by a unit root, the estimated parameter is not biased only if both variables are characterized by a long-run equilibrium relationship, known as cointegration. Greene, W.H. *Econometric Analysis*, 4th edn (Prentice Hall, 2000).

[232] See Canada's response to Arbitrator question No. 34, para. 103 ("Including the U.S. price as an explanatory variable creates bias in the regression model because it is endogenous: many of the same influences that affect the Canadian price also affect the U.S. price.").

[233] United States' response to Arbitrator question No. 32, para. 5.

to domestic livestock. A price basis regression effectively controls for other factors that would have had the same effect on North American livestock prices, and is therefore apt to identify and isolate the impact of the COOL measure. In the next section, we discuss the application of this logic to specific variables and the rationale for their inclusion or omission in a price basis model.

5.2.1.2 Variable omission

5.2.1.2.1 Arguments of the parties

5.63. Canada and Mexico each control for a limited set of variables in their respective model specifications for the estimation of the impact on price basis.

5.64. The United States argues that both Canada's and Mexico's model specifications suffer from variable omission by failing to include a number of factors affecting the North American livestock and meat markets during the time-period reviewed.[234] According to the United States, the estimations of the impact of the original and amended COOL measure account not only for the original and amended COOL measure's own effects but also capture some impacts of the missing variables.[235] The United States submits that "it is important to ensure that, in determining the level of nullification or impairment, trade effects attributable to a factor other than the measure at issue are not attributed to the measure at issue since that would result in an erroneous level of nullification or impairment."[236]

5.65. The United States thus contends that the econometric analysis presented is "insufficient to isolate the effects of the amended COOL measure" and that, "[t]o be robust, this methodology must systematically account for all relevant supply and demand shifters".[237] The United States lists a number of independent variables that should be controlled for, which "include, but are not limited to": economic fluctuations and recession; long-term unemployment; increased feed costs; shifts in Canadian and Mexican livestock and meat processing; shifting transportation costs; weather patterns and drought; impacts of animal disease such as bovine spongiform encephalopathy (BSE) in the Canadian herd; and increased demand for meat during US holidays.[238]

5.66. Canada and Mexico both reject the United States' contention regarding variable omission, arguing that their specifications include all the relevant exogenous variables to measure the causal impact of the COOL measure on prices.[239]

5.67. Canada submits that the inclusion of variables in the model should be based on objective criteria, namely: (1) economic reasons to believe the variables have a causal impact; (2) the variables must be "clearly exogenous"; and (3) the variables must not be "temporally correlated with the dependent variable in some non-causal or random way to avoid biasing impacts of other variables."[240] Additionally, Canada contests the need to include variables that do not differentially impact livestock prices and for which excluding the variable from the model does not lead to systematic bias in the estimates of interest, i.e. the impact of the COOL measure.[241]

5.68. Mexico notes that "only exogenous variables that have a causal impact should be included as explanatory variables … [that] there will be omitted variable bias only if the omitted variable is correlated with the variable of interest … [and that] the United States has failed to explain why any of the 'omitted variables' it has identified … would have a differential impact on the price of imported Mexican cattle."[242] Furthermore, Mexico argues that their "Methodology Paper uses a

[234] United States' written submission (Mexico), paras. 69-71; United States' written submission (Canada), paras. 96-99.
[235] United States' written submission (Mexico), paras. 69-71; United States' written submission (Canada), paras. 96-99.
[236] United States' opening statement at the meeting of the Arbitrator, para. 28.
[237] United States' opening statement at the meeting of the Arbitrator, para. 54.
[238] United States' written submission (Mexico), para. 71; United States' written submission (Canada), para. 99.
[239] Canada's written submission, para. 37; Mexico's written submission, para. 15.
[240] Canada's written submission, para. 38.
[241] See Canada's written submission, paras. 40-49; Canada's response to Arbitrator question No. 35.
[242] Mexico's written submission, para. 16.

careful approach to include only the variables that are economically relevant in the regression models."[243] Mexico points out that because they use the price of Mexican feeder cattle in New Mexico and Texas, and compare that to the price of United States' feeder cattle at the same locations, only a limited number of factors can explain any difference.[244]

5.2.1.2.2 Analysis by the Arbitrator

5.69. In an econometric regression with price basis as the dependent variable, the relevant explanatory variables are those that affect the difference between export prices and US prices of livestock. In other words, only variables that have a *differential* impact on livestock prices need to be controlled for and included in the model specification. As described above[245], variables having an equal impact on export and US livestock prices will have no impact on the price basis, and therefore would not need to be included in the model.

5.70. In their respective methodology papers, Canada and Mexico have each controlled for certain variables in their model specifications. The control variables included by Canada and Mexico correspond to their differing definitions of price basis – while Canada compares the price of Canadian livestock in Canada with the price of US-origin livestock in the United States, Mexico compares the price within the United States of both Mexican-origin and US-origin livestock. To address the issue of variable omission, we briefly outline the price basis specifications used by Canada and Mexico to discuss the variables they have each controlled for in their proposed methodologies. We then turn to the question of additional relevant variables that the United States contends have been omitted.

5.71. Canada and Mexico use similarly specified equations to estimate the impact of the COOL measure on the price basis. Each price basis specification includes parameters representing the effects of the original and amended COOL measures. The price basis specifications also include a "lagged dependent variable" to measure the relationship between the price basis at a certain point in time *t* and the price basis in the previous period *t-1* (i.e. the previous week for Canada and the previous month for Mexico). The goal of the equations is to estimate the magnitudes of the parameters for the original and amended COOL measures, as well as the lagged dependent variable, in order to calculate the change in price (ΔP) in the determination of export revenue losses caused by the COOL measure.

5.72. This can be illustrated in the following equation used by Canada for its price basis specification[246]:

$$Pe_t - Pus_t = \alpha + \beta Z_t + \gamma_1(DCOOL1) + \gamma_2(DCOOL2) + \delta(Pe_{t-1} - Pus_{t-1}) + vp_t$$

In this equation, Pe_t represents the Canadian export price in period t, and Pus_t represents the price in the United States; the difference between these two prices ($Pe_t - Pus_t$) is the price basis as defined by Canada. Mexico uses a similarly specified equation with respect to its definition of price basis, namely the difference between prices of Mexican-origin and US-origin feeder cattle within the United States. Both Canada and Mexico assign parameters for the original and amended COOL measures. In the above equation, parameters γ_1 and γ_2 represent the effects of the variables for the original (DCOOL1) and amended (DCOOL2) measures. Parameter δ corresponds to the "lagged dependent variable" ($Pe_{t-1} - Pus_{t-1}$), which reflects the tendency for causal factors to have impacts that linger for more than one period, and measures the degree to which impacts gradually dissipate over time.

5.73. The other parameters in the above price basis specification are intended to capture the impact of other explanatory variables with respect to price basis. Parameter α is the intercept of the equation, and the random error term vp_t represents random events or drivers that have impacts on exports but that are not accounted for by, and are uncorrelated with, the included explanatory variables.

[243] Mexico's written submission, para. 42.
[244] Mexico's written submission, para. 43.
[245] See para. 5.50 above.
[246] Canada's methodology paper, Sumner Study, para. 74, equation (6).

5.74. The parameter vector β represents the effect of control variables in the set Z_t on the prices. In Canada's price basis specification, this includes: (a) monthly dummy variables to represent seasonality in the variation of cattle and hog export prices; (b) changes in the exchange rate between U.S. dollars and Canadian dollars; (c) dummy variables for two BSE-related events specific to Canadian cattle; and (d) a dummy variable for changes in hog processing capacity resulting from closure of a plant.[247] In Mexico's price basis specification, this includes: (a) monthly dummy variables to represent seasonality in the variation of cattle and hog export prices; and (b) a dummy variable for drought events.[248]

5.75. Both Canada and Mexico have thus controlled for certain variables in the benchmark specifications presented in their methodology papers. The United States contends that relevant explanatory variables have been omitted from these specifications, and that "all other relevant explanatory variables *must* be controlled for to isolate the impact of COOL on the dependent variable".[249]

5.76. We agree that omission of a relevant explanatory variable could potentially bias the estimates of the COOL impact, specifically by erroneously attributing effects to the COOL measure that are actually caused by other factors.[250] However, the determination of whether a relevant explanatory variable has been omitted turns on the specific nature of the dependent variable in relation to the allegedly omitted variables in question.

5.77. In this connection, the parties agree on certain general criteria for assessing whether a given variable should be included in econometric modelling.[251] First, including the variable must be consistent with economic theory and logic in terms of that variable's impact on the dependent variable. In the absence of an economic rationale justifying inclusion of a variable, the omission of that variable does not amount to misspecification of the model. Second, the variable must satisfy various econometric conditions such as being exogenous in the sense that it is not itself caused or impacted by the dependent variable.[252] Other econometric conditions include correlation with other variables in the model, including other explanatory variables and the error term. Finally, a relevant consideration is the data that are available for a variable, and the extent to which a proxy variable may introduce measurement errors in the regression analysis.

5.78. We apply these general criteria to the price basis specifications of Canada and Mexico outlined above. As a threshold consideration of economic theory and logic, we recall that we have accepted the use of price basis as the dependent variable, which means that only variables that would be expected to have a *differential* impact on prices should be included. The United States asserts relevant omitted variables include, but are not limited to, a wide variety of factors relating to the livestock production process, macroeconomic trends, market participants' behaviour, and animal disease.[253] While it is not contested that such factors could be important to an assessment of absolute export prices, the fundamental question is whether any given factor would affect the prices of Canadian and Mexican livestock differently from those of US livestock.

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[247] See Canada's methodology paper, Sumner Study, paras. 67, 69, and 74-85.

[248] See Mexico's methodology paper, Pouliot Study, pp. 14-16, equation (4); Mexico's written submission, para. 43(d). We note that Mexico's price basis specification, while using slightly different annotations for parameters, is structured similarly to that of Canada.

[249] United States' response to Arbitrator question No. 6, para. 39. (emphasis original)

[250] See Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.184.

[251] Canada's written submission, para. 38; Mexico's response to Arbitrator question No. 6. We note that the United States submits a list of criteria which it considers to be "more extensive than that provided by Canada", with considerations additional to those argued by Canada and Mexico. United States' response to Arbitrator question No. 6, para. 40. Although not identical, we see substantial overlap between the criteria submitted by the United States and those that we apply in our analysis. The full list of criteria submitted by the United States is as follows:

> All predictions made from the model must be logically possible; the model must be consistent with economic theory; explanatory variables must be exogenous or uncorrelated with the error term; parameter values must be stable otherwise predictions will be unreliable; residuals estimated from the model must be random; and the model should consider all rival models, that is, other models cannot be an improvement over the chosen model. (United States' response to Arbitrator question No. 6, para. 40 (footnotes omitted))

[252] Inclusion of an *endogenous* variable, i.e. a variable that is itself affected by the livestock price basis, would lead to inconsistent and/or biased estimation.

[253] See United States' opening statement at the meeting of the Arbitrator, para. 53 and Sample Economic Revisions to Canada's Feeder Cattle Quantity Estimates, (Exhibit USA-53), p. 9.

5.79. We recall that the products under considerations are "like products" in the sense that they are distinguished solely on the basis of their origin, rather than any of the well-established criteria for likeness.[254] Given the integrated nature of the North American livestock market and the arbitrage conditions equalizing price differences, the key variables of relevance to our analysis are those representing trade barriers and differential transaction costs (such as transport costs). Other than the impact of such variables on the price basis, the market conditions in which the products in question are traded suggest that products distinguished only by origin would otherwise sell for the same price in the same place. In our view, therefore, the price basis specification does not need to include all potential supply and demand shifters within the relevant markets, as contended by the United States, but only those that account for trade barriers and transaction costs.

5.80. We note that the logic of "differential transaction costs" applies differently to the price basis specifications of Canada and Mexico due to the different ways in which they have defined price basis. In Mexico's case, the price basis is a comparison of prices of Mexican and US-origin livestock in the same place, i.e. within the United States.[255] As explained by Mexico, "[t]he price paid to Mexican producers is slightly lower than the price paid for Mexican feeder cattle in the United States because of transaction costs (including transportation)".[256] Transaction costs stemming from transportation and exchange rates "have already been incurred" at the time of sale in the United States, and "the price of Mexican feeder cattle is determined solely by the valuation for feeder cattle by U.S. buyers".[257]

5.81. This is distinct from the comparison made by Canada between livestock prices in Canada and in the United States. The price of livestock *within* Canada does not similarly reflect additional costs associated with transport to the United States and exchange rates between Canada and the United States. We note that Canada has controlled for changes in the exchange rate to account for the fact that "short term movements in the exchange rate may affect prices" at which exported livestock are sold.[258] However, Canada has not controlled for transportation costs of exporting cattle to the United States. Such costs are a basic factor of trade costs that could account for a difference between the price of products that are identical apart from origin.[259] Accordingly, we consider that such transport costs should be controlled for in a price basis regression in which price basis is defined in the manner proposed by Canada.[260]

5.82. Apart from the inclusion of transport costs in Canada's price basis specification, we accept the explanatory variables that Canada and Mexico have each controlled for in their respective models. With regard to additional variables that the United States contends have been omitted, we decided to focus on a limited number of variables, based on the criteria above, that may have impacted the price basis, namely: (a) economic recession; (b) other competing imports from Canada and Mexico; (c) feed costs; and (d) drought. It is not contested that these variables may have some differential impact on the supply and demand curves *within* Canada, Mexico, and the United States. However, under full adjustment to arbitrage conditions in a highly integrated market in which exporters are price-takers, we do not consider that these variables would affect the price gap between imported and domestic products in the US market. For example, despite the

[254] See Panel Reports, *US – COOL*, para. 7.253.
[255] We note that these prices are drawn from the same data source, as discussed in section 5.2.3 below.
[256] Mexican methodology paper, Pouliot Study, p.18, footnote 6.
[257] Mexico's written submission, para. 43(a).
[258] Canada's methodology paper, Sumner Study, para. 71.
[259] This is illustrated in the following equation wherein *Pcc* is the price of Canadian animals in Canada, *Puu* is the price of US animals in the United States, and *Pcu* is the price of Canadian animals at their US destination: (*Pcu – Puu*) = (*Pcc – Puu*) + (*Pcu – Pcc*). In this equation, (*Pcu – Puu*) represents a price basis comparing prices in the same location; (*Pcc – Puu*) represents the price basis as defined by Canada; and (*Pcu – Pcc*) represents the additional transportation costs that are part of the price basis comparing prices within the United States. See Canada's response to Arbitrator question No. 6, paras. 21-23 (providing a different arrangement of this equation).
[260] Canada acknowledges that "[c]hanges in differential transport costs might be a factor in trade, but those differentials are small because the United States is such a geographically large country and cattle and hogs are shipped many miles and from state to state within the United States". Canada's written submission, para. 44. Although this assertion has not been concretely substantiated in this arbitration, we do not consider that it obviates the theoretical grounds for including transport costs in Canada's price basis specification. To the extent that transport costs represent a small share of livestock prices, or that they are comparable for animals of different origins, this is something that would be subject to empirical evaluation through econometric analysis.

different timing and severity of economic recession in the United States[261], the price basis would theoretically remain unchanged if arbitrage occurred without frictions. Likewise, factors impacting the supply of livestock from Canada and Mexico would be of limited relevance to a price basis analysis where prices are set according to conditions within the US market, and where arbitrage by producers and buyers operates to equalize temporary price differences.

5.83. Nevertheless, adjustments to price levels through arbitrage are not instantaneous, and time lags in the adjustment process can theoretically account for temporary changes in the price basis. In order to control for these impacts, we have reviewed empirical evidence on the implications of including the above variables in the price basis specifications of Canada and Mexico, particularly the extensive material provided by the parties in response to written questions from the Arbitrator.[262] This includes the results of regressions including these variables separately and all together in a single specification, with results from different proxies for each variable, namely: (a) dummy variables and unemployment rates for economic recession; (b) data on other competing imports from Canada and Mexico; (c) corn and barley prices as well as future prices for feed costs; and (d) drought monitor reports as well as a dummy variable for drought.

5.84. We examined the results of including these variables in levels and in first differences (i.e. the difference between the value of a variable at a given time *t* and the preceding time *t-1*). The reason for including certain variables in first differences was to capture the fact that the change in such variables (e.g. proxies for recession) is the shock that is the relevant potential impact on price basis, rather than the level of such variables. In addition, running the regression with certain variables in first differences corrected for unit roots.

5.85. Based on our review, we do not find compelling empirical evidence for the inclusion of the additional variables in the price basis specifications of Canada and Mexico. These variables (and respective proxies), either included separately or all together, are not always and consistently statistically significant in any discernible pattern across the different animal categories (i.e. fed/feeder cattle/hogs) when either a 5 or 10 per cent significance level is used as the criterion for the level of significance.[263] Thus, there is no consistent empirical evidence that any of the variables examined, or all of them together, is an explanatory factor that should be included in the price basis specification. Furthermore, we note that the estimations of the impact of the COOL measure on the price basis are robust to inclusion of these additional variables that the United States argues have been omitted. In other words, the COOL measure parameters, which are the primary interest of this analysis, remain consistent and statistically significant even when these additional variables are included.

5.86. Accordingly, we consider that Canada's proposed price basis specification omits transport costs, while Mexico's price basis specification does not suffer from omission of this variable. As regards other variables discussed in this section, we do not find conclusive evidence that they need to be included in a price basis estimation. However, to the extent statistically significant estimates of such variables (though inconsistent across animal categories, the proxy used, and whether estimated in levels or first differences) confirm the fact that adjustment lags and market frictions may lead to such variables affecting the price basis, we reserve consideration of such variables for the purposes of checking the robustness of our own determination of the COOL measure's impact on export prices.

5.2.1.3 Price impact on Canadian feeder pigs

5.2.1.3.1 Arguments of the parties

5.87. As described above in section 3.1, Canada does not use regression analysis to estimate the price impact on feeder pigs. Canada explains that "it was not possible to estimate these impacts

[261] See S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014), (Exhibit USA-35), p. 111.

[262] See parties' responses to Arbitrator question No. 35.

[263] A given variable is usually said to be statistically significant when there is at most a 5 per cent probability that the value of the estimated coefficient is due to chance or random error. Put differently, this refers to when there is at least a 95 per cent probability that the value of the coefficient variable in question is different from zero. See Panel Reports, *US – COOL*, para. 7.510; *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.185; R.A. Fisher, *Statistical Methods for Research Workers*, 1st edn (Oliver & Boyd, 1925).

statistically" because "no consistent time series of price data amenable for statistical analysis is available for feeder pigs in Canada."[264] Canada relies instead on a descriptive comparative analysis of price information based on [[**BCI**]] invoices provided by a Canadian firm trading in feeder pigs on either side of the border.[265] Canada also relies on witness statements submitted by the president of that firm. In the witness statements, it is stated that the firm controls [[**BCI**]] per cent of the export market of feeder pigs to the United States.[266]

5.88. Canada pairs the invoices into [[**BCI**]] pairs of transactions, each pair including a cross-border (Canada-US) and an intra-US (US-US) transaction to allow for comparison.[267] The invoices cover weanlings (i.e. baby pigs weighing less than 7kg) and larger feeder pigs.[268] They relate to a period between July 2012 and early 2015, thus comparing the price difference between US and Canadian feeder pigs before and after the entry into force of the amended COOL measure.[269] The discount effect established on the basis of this comparison is then added to the discount effect of the original COOL measure, which is derived from witness statements, to form a total discount suffered as a result of the COOL measure.[270] The respective average discounts for the two weight categories (i.e. weanlings and larger feeder pigs) are weighted by 70 and 30 percent, representing, according to the witness statement, Canada's respective export shares for weanlings and larger feeder pigs.

5.89. The United States notes that the data are taken from a single firm in the Canadian market, which provided only a limited set of invoices.[271] The United States further notes that the information from the invoices does not indicate (i) the location of the purchasers, (ii) the size of the pigs, or (iii) the volume of pigs sold per transaction.[272] The United States argues that "there is no way to tell if volume discounts, transportation costs, or different product specifications play a role in the alleged price basis."[273] According to the United States, it is also likely that the firm submitting such data participated in more transactions than evidenced by the limited number of invoices submitted, and any long-term trend should be discerned from the entirety of transactions rather than a small sample.[274] The United States takes the view that Canada should have submitted the entire sales files of the firm in question[275], and further submits that Canada should have submitted sales files from more than one "large" feeder pig provider.[276] The United States also suggests that a consistent time series of monthly data *is* available in the form of Agriculture and Agri-Food Canada reports as well as US Census Bureau data.[277]

5.90. Regarding the reliability and representativeness of the invoice data, Canada notes that the evidence submitted is consistent with the price trends determined through data for the other three categories of livestock.[278] Additionally, Canada states that the [[**BCI**]] paired transactions were chosen "to ensure that the invoices represented average volumes and average transportation costs."[279] Canada further notes that witness statement submitted is a sworn statement.[280] Canada submits that it has used the "best available information", for its calculations of price impact on feeder pigs, and that a lack of government data should not deny Canada losses for the drop in

[264] Canada's methodology paper, Sumner Study, para. 99.
[265] Exhibit CAN-7 (BCI).
[266] Exhibit CAN-7 (BCI), p. 1.
[267] Exhibit CAN-7 (BCI). See also Exhibit CAN-95 (BCI).
[268] Exhibit CAN-7 (BCI).
[269] Exhibit CAN-7 (BCI).
[270] Canada's methodology paper, Sumner Study, paras. 105 and 108 (referring to witness statement of [[**BCI**]], Exhibit CAN-7 (BCI)). In this witness statement, [[**BCI**]] refers to witness statements previously submitted in the compliance proceedings of these disputes, including his own dated October 2013. Canada re-submits these witness statements in these proceedings as Exhibit CAN-8 through Exhibit CAN-19 (all BCI).
[271] United States' written submission (Canada), para. 112.
[272] United States' written submission (Canada), para. 112.
[273] United States' written submission (Canada), para. 112.
[274] United States' written submission (Canada), paras. 112-113.
[275] United States' comments on Canada's response to Arbitrator question No. 52, para. 89.
[276] United States' comments on Canada's response to Arbitrator question No. 52, para. 89.
[277] United States' response to Arbitrator question No. 21, para. 76.
[278] Canada's written submission, para. 56.
[279] Canada's response to Arbitrator question No. 19, para. 51 (citing Exhibit CAN-52 (BCI), para. 4).
[280] Canada's written submission, para. 55. At the substantive meeting with the Arbitrator, Canada explained that the witness statement had been submitted under oath in order to address concerns regarding the representativeness and accuracy of the information attested to.

feeder pig prices resulting from the COOL measure.[281] Following a question from the Arbitrator, Canada confirms that it does not have access to transactional information via other governmental sources.[282]

5.2.1.3.2 Analysis by the Arbitrator

5.91. We begin by observing that Canada is free to decide which approach to adopt in order to estimate the price impacts of the COOL measure on its trade in feeder pigs. In particular, the fact that it uses an econometric approach for all other price estimations does not mean that it has to do so for feeder pigs as well. The United States does not contest this, nor does the United States challenge the comparative analysis of invoices as an invalid approach *per se*.

5.92. What the United States challenges is the way in which the comparative analysis has been carried out, and in particular the representativeness and comparability of the data used.

5.93. We asked Canada for additional invoices and additional information on certain issues. We also asked Canada to econometrically estimate the price impact using available monthly data from the US Census Bureau or AMS in order to compare the outcome. We acknowledge that Canada has made every effort to fully answer our requests and questions within the short timeframes applicable in these proceedings. The replies of Canada, however, do not sufficiently address the concerns that the United States has raised, and indeed raise further questions about the data used to estimate the impact on the price of feeder pigs.

5.94. We have now a total of [[**BCI**]] invoices submitted, which represents 3.2 per cent of the total number of [[**BCI**]] transactions during the period of 2012 to 2015 (namely [[**BCI**]]). We note the United States' view that Canada should have submitted all invoices of [[**BCI**]] as well as invoices from other Canadian traders. Apart from the broader evidentiary issue this may raise, we see a number of factors that call into question the representativeness and comparability of the data actually submitted.

5.95. First, we note that no invoices on weanlings from the pre-amended COOL period seem to be available.[283] This raises questions given that (1) [[**BCI**]][284] and (2) we are asked to rely on [[**BCI**]] witness statement regarding the applicable discount on weanlings during that same period. No further explanation has been provided in this regard.

5.96. Second, we note that there are significant differences in the level of discount (i.e. price differential) identified between the witness statement submitted in October 2013 and the first set of invoices and, again, between the first set of invoices and the additional invoices submitted at our request. The witness statement identified the average discount for larger feeder pigs for the amended COOL measure to be between USD 5 and USD 10.[285] The first set of invoices identifies the same discount as USD 10.88, whereas in the additional set of invoices, that discount increases to USD 14.97.[286] In addition, the decline in discount between the original COOL measure and the amended COOL measure, as identified in the witness statement, is a median of USD 3.50.[287] The same differential between the original COOL measure and the amended COOL measure is USD 4.87 in the first set of invoices and USD 10.63 with the additional set of invoices (i.e. more than twice as large).[288] With respect to weanlings, the average discount for the amended COOL measure goes from USD 9.18 in the first set of invoices to USD 10.78 in the additional set of invoices.[289] Canada submits that this demonstrates that the original invoice sample included is

[281] Canada's written submission, para. 56.
[282] Canada's response to Arbitrator question No. 52.
[283] The table contained in Exhibit CAN-95 (BCI) states in respect of such invoices: "Not available from [[**BCI**]]."
[284] Exhibit CAN-7 (BCI), para. 4.
[285] Exhibit CAN-8 (BCI), para. 9; see also Canada's methodology paper, Sumner Study, para. 108.
[286] Exhibit CAN-95 (BCI), table of invoice data. The additional invoices increase the COOL discount by 37.6 per cent.
[287] Canada's methodology paper, Sumner Study, para. 108.
[288] Exhibit CAN-95 (BCI), table of invoice data. The additional invoices increase the COOL discount by 118.3 per cent.
[289] Exhibit CAN-95 (BCI), table of invoice data. The additional invoices increase the COOL discount by 17.4 per cent.

conservative.[290] In our view, however, these significant differences call into question the representativeness and reliability of the "discount" identified, in particular with respect to larger (non-weanling) feeder pigs.

5.97. Third, even assuming that the Canadian prices submitted are representative of the market price, we have doubts about the representativeness of the US prices in the invoices submitted by [[**BCI**]]. Canada states that no more than [[**BCI**]] per cent of [[**BCI**]] transactions are US-US transactions. In other words, out of the total of [[**BCI**]] transactions that [[**BCI**]] carried out during the period of July 2012 to May 2015, only a maximum of [[**BCI**]] transactions were US-US transactions. A sample comparison of US transaction prices indicated in the invoices with AMS monthly average rates of US prices for the same dates shows that the average invoice price of US feeder pigs is considerably higher. For example, the greatest price differential in the invoices submitted is for September 2014. The US-US transaction for that month indicates an average rate for a 40lb pig of [[**BCI**]]; the AMS monthly average rate for the same month is USD 80.8.[291] We note that the AMS price for September 2014 [[**BCI**]].[292] This shows that use of invoice data can lead to significantly greater price differentials than what is indicated by average monthly US prices reported by the AMS. In sum, we are not convinced that US prices submitted by [[**BCI**]] are actually representative of the US market given their relatively high price volatility.

5.98. Fourth, the varying weight of feeder pigs is another reason to call into question the comparability of the price data submitted. In some of the paired invoices, the weight of the pigs differs substantially.[293] We understand that the price for feeder pigs is calculated on the basis of weight and that a "rate" is applied that differs from the first 40lb to the next 20lb, and again to any additional weight over 60lb.[294] In some paired invoices, the weight of the pigs differs between 10 and 20kg. How that weight difference affects the final price, and thus the price differential, depends on the rate that is applied. In one paired sample submitted, the rate applied to Canadian and to US pigs differs by only [[**BCI**]], whereas the average differential of the actual price paid shows [[**BCI**]] for Canadian pigs. Based on our review of the evidence, we understand the reason for this differential to be that the Canadian pig is 13kg (about 26 per cent) heavier than its US counterpart and, therefore, is sold at a higher price. In another sample, the price rates differ by [[**BCI**]], but the price differential is only [[**BCI**]]. Our understanding is that this is because the Canadian pig (sold at the cheaper rate) is 15kg (about 25 per cent) heavier, which increases its final price and therefore makes the price differential comparatively smaller. In sum, different weights have an impact on the price differential. Therefore, where weights differ significantly, it calls into question the comparability of the prices. This is particularly important because Canada considers that the price difference of comparable Canadian and US feeder pigs is entirely due to the COOL measure.

5.99. Finally, we note some lacunae in the invoices submitted. First, it was stated that no invoices were available for the month of January 2014[295], and therefore there are no data during one month in the time series. Furthermore, we note invoice No. 71, as listed in the table, has not been submitted. Instead, we find an invoice to a different company with a price listed as [[**BCI**]] per weanling instead of the [[**BCI**]] listed in the table. These irregularities further call into question the statistical reliability of the invoices Canada submitted to estimate the impact of the COOL measure on feeder pig prices.

5.100. As noted above, we had asked Canada to submit an econometric estimation of the feeder pig price based on available monthly data. The purpose was to compare the result to the results of

[290] Canada's response to Arbitrator question No. 55.
[291] The AMS monthly average is taken from the database submitted by Canada in Exhibit CAN-82.
[292] Similarly, according to [[**BCI**]], the US average rate for 40lb was [[**BCI**]] in July 2014, while the AMS monthly average for the same month was USD 117.90; [[**BCI**]] average rate for the month of August 2014 was [[**BCI**]], whereas the AMS average rate for the same month was USD 96.28. See Feeder Pigs Monthly Import Data, (Exhibit CAN-82).
[293] We note that weanlings are priced on a per head basis. The discussion above therefore only concerns non-weanling feeder pigs. However, we observe that one invoice submitted on weanlings also indicated a weight, namely that of [[**BCI**]]. As this is not a weanling's weight (less than 7kg), it is not clear why this invoice was submitted as an example of a weanling's price. Furthermore, it is not clear whether the paired US-US transaction (which does not indicate a weight) is for a pig of the same or similar weight. See table in Exhibit CAN-95 (BCI) table of invoice data and attached invoice No. 78.
[294] See also Exhibit CAN-95 (BCI), table of invoice data, footnote 3.
[295] Exhibit CAN-95 (BCI), table of invoice data.

the comparative analysis of the invoices to get a sense of how far apart these two approaches are. However, we are unable to compare the two results because the two approaches rely on data for different weight categories. While the monthly data used in the econometrics cover weanlings below 7kg and feeder pigs between 7kg and 23kg, the invoice data also include larger feeder pigs between 23kg and 50kg.[296]

5.101. Canada contends that it has used the best available information for its calculations of price impact on feeder pigs, and that a lack of government data should not deny Canada losses for the drop in feeder pig prices resulting from the COOL measure.[297] We agree that if and where a Member has submitted the best available information, it might be appropriate for an arbitrator to decide to accept that information in that particular proceeding. However, we note that in this arbitration, alternative data sets have been proposed that do not suffer from the fundamental issues of representativeness and comparability described above.[298] Thus, for the reasons set out above, we are not convinced that the information submitted by Canada does indeed qualify as the "best available information".

5.102. In conclusion, we find that Canada's estimation of the feeder pig price is not sufficiently reliable. Given this finding, we do not need to address the broader question, raised by the United States, of whether Canada would have had to submit all invoices of the firm in question and also invoices from other companies.

5.2.2 Quantity impact estimation

5.2.2.1 Canada's econometric estimation

5.2.2.1.1 Arguments of the parties

5.103. Canada uses an econometric analysis to estimate the impact of the COOL measure on the quantity of livestock exported to the United States.

5.104. The United States argues that "[f]or the estimates in Canada's model to reflect any degree of accuracy, the variables that may have an effect on price or quantity must be accurately estimated and properly specified."[299] Thus, the United States makes the same arguments against Canada's econometric determination of quantity impact that it makes in respect of the econometric determination of price basis (i.e. regarding variable omission and the suitability of econometric analysis for isolating the impact of the COOL measure).[300]

5.105. Canada argues that its econometric estimations are focused "solely" on the impact of the COOL measure, and deliberately exclude "extraneous variables that would introduce concerns that would bias the measured impacts of the amended COOL measure".[301] Canada submits that, "[a]s with the price basis, export quantity, by definition, reflects the difference in economic conditions between the markets in the two countries."[302] Canada further states that, "[j]ust as with the price basis, variations in export quantity are driven by variations in the functions representing both the demand for imports and supply of exports."[303]

5.2.2.1.2 Analysis by the Arbitrator

5.106. As described above, an accurate econometric analysis requires capturing and accounting for relevant factors (independent explanatory variables) that have an effect on the dependent variable (in this case the change in quantities exported). If accurately specified, an econometric

[296] An additional issue is, as the United States notes, that the prices are not weighted 70 to 30 as was done in the invoice analysis in accordance with the stated respective market share of weanlings and larger feeder pigs. United States' comments on Canada's response to Arbitrator question No. 57, para. 100.
[297] Canada's written submission, para. 56.
[298] United States' response to Arbitrator question No. 21, para. 76.
[299] United States' written submission (Canada), para. 93.
[300] See United States' written submission (Canada), paras. 91-104; United States' response to Arbitrator question No. 5(a), para. 30.
[301] Canada's written submission, para. 26.
[302] Canada's response to Arbitrator question No. 5(b), para. 15.
[303] Canada's response to Arbitrator question No. 5(b), para. 15.

analysis should isolate the effects of a particular independent variable (in this case the COOL measure) to determine its impact on quantities of Canadian livestock exported to the United States.

5.107. The quantity estimation submitted by Canada, unlike the price basis specification discussed above, is in terms of absolute quantity levels. We recall that the price basis specification was appropriate given the nature of the North American livestock market and evidence of price-arbitrage conditions. Focusing on the price basis enabled exclusion of variables that did not differentially impact prices of different-origin livestock. As noted by Canada in that context, "including the U.S. price in the basis specification allows one to capture parsimoniously the impacts of a host of variables that may affect livestock prices in both countries in a similar way".[304]

5.108. Estimating quantity impacts in absolute levels, by contrast, does not similarly permit omission of variables that had a common impact on North American markets. Rather, such an estimation would need to account for any supply or demand factor affecting export quantities. Canada refers to "the amended COOL measure's impact on export quantity" also being "direct, i.e. it caused a loss of export shipments between Canadian and U.S. locations."[305] While it is expected that the COOL measure, as the relevant explanatory variable of interest, would affect export quantities, failure to control for other such variables creates the potential for introducing bias in the COOL parameter estimates.

5.109. We note Canada's acknowledgement that the purpose of its regression specification is "to estimate the magnitude of the impact on actual exports" that should "generate estimates that directly enter the calculation of losses".[306] At the same time, Canada refers to the exclusion of factors that affect livestock export quantities, citing lack of available data and likely underestimation of the COOL impact as a result of omitting the variables.[307] However, these are among many other potential variables that have been omitted in Canada's quantity specification. As pointed out by the United States, separate estimations of absolute price and quantity impacts would need to control for the same exogenous factors as explanatory variables.

5.110. Therefore, Canada's econometric estimation does not adequately control for relevant explanatory variables that, in addition to the COOL measure, may affect livestock export quantities. Although Canada's quantity specification mirrors its price basis specification in respect of the set of control variables, the methodological advantages afforded by focusing on price differentials do not apply to an estimation of absolute quantity levels. As a result, we are unable to accept Canada's econometric estimation of the impact of the COOL measure on export quantities.

5.2.2.2 Mexico's elasticity-based simulation of quantity effects

5.2.2.2.1 Arguments of the parties

5.111. To estimate the impact of the COOL measure on the quantity of Mexican feeder cattle exports, Mexico relies on a simulation using the COOL impact on export prices (estimated econometrically using the price basis) and a derived elasticity of export supply.

5.112. The United States argues that this approach is "insufficient to account for the complexity of the feeder cattle market in Mexico and the United States, much less to account for linkages to demand for fed cattle and beef or to substitute products such as pork."[308] The United States is of the view that the calculation should account for all factors influencing quantity outcomes, including supply and demand effects in the United States and in Mexico, as well as the impact of exports from Canada to the United States.[309] The United States suggests that "Mexico's estimation of the quantity impact is based on a formula which assumes 100 percent pass through of the bias

[304] Canada's written submission, para. 35.
[305] Canada's response to Arbitrator question No. 5(b), para. 15.
[306] Canada's response to Arbitrator question No. 5(b), para. 16.
[307] Canada's methodology paper, Sumner Study, paras. 68, 70, and 129-131; Canada's written submission, paras. 47-49.
[308] United States' written submission (Mexico), para. 82.
[309] United States' written submission (Mexico), para. 82.

inherent in the price basis estimate into the quantity change simulation. The result is an estimate that grossly overestimates the effect of COOL on U.S. imports of feeder cattle from Mexico."[310]

5.113. Additionally, the United States argues that the value of the export supply elasticity used to simulate the counterfactual change in export volumes is unproven, un-reviewed, and derived with little explanation.[311] According to the United States, Mexico's elasticity of export supply is based on a single year, 2012, a period of time most certainly affected by drought and other factors.[312] The value of the export supply elasticity also appears to make unsupported assumptions about the rate of export.[313]

5.114. Mexico notes that its equation for determining the elasticity of the export supply curve is identical to an equation used in the United States' EDM.[314] Additionally, Mexico submits that this single equation is "sufficient and does not need to account for the complexity of the feeder cattle market in Mexico and the United States because, as explained previously, this is accounted for in the … price basis regression."[315] Mexico further notes that exports of livestock from Mexico and Canada "represent a small share of the total U.S. livestock market."[316] Mexico therefore asserts that "[c]hanges in export volumes from Mexico and Canada would thus have a small impact on U.S. livestock prices."[317] According to Mexico, the geographic size of the United States also limits direct competition between Mexican and Canadian cattle.[318]

5.115. Regarding its estimated export supply elasticity figure, Mexico contends that the figure was "derived based on observed data in a transparent way."[319] Mexico notes that the derived elasticity value of 4.0 is reasonable given the size and structure of Mexico's cattle market, as well as empirical evidence on supply and demand elasticities.[320] Mexico asserts that 4.0 is a "conservative estimate" given the empirical evidence and the "length of run over which the market adjusts to the introduction or the removal of COOL measures."[321] Mexico further argues that "[t]he calculation of the export supply elasticity builds on values from the literature for Mexico's domestic demand and supply of feeder cattle and uses the observed share of feeder cattle produced that it exported to the United States. This is the proper method to calculate the elasticity."[322]

5.2.2.2.2 Analysis by the Arbitrator

5.116. In contrast to Canada's econometric estimation of quantity impact, Mexico relies on an elasticity-based simulation. Based on the econometrically estimated impact of the COOL measure on export prices, Mexico simulates the corresponding impact on export volumes using a derived elasticity of export supply.

5.117. Elasticity measures the responsiveness of one economic variable to a change in another variable. Mexico derives the export supply elasticity value by using a rearranged expression of the elasticity of the export supply curve. The elasticity of the export supply curve measures how the volume/quantity of exports responds to changes in the export price. In mathematical terms, the price elasticity is defined as the ratio between the percentage change in export quantities and the percentage change in export price in relative terms.

5.118. The counterfactual change in export quantity is expressed as the product of: (a) the counterfactual change in export price; (b) the inverse of the export price in the baseline period;

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[310] United States' comments on Mexico's response to Arbitrator question No. 34, para. 19.
[311] United States' written submission (Mexico), para. 84.
[312] United States' written submission (Mexico), para. 84.
[313] United States' written submission (Mexico), para. 84.
[314] Mexico's written submission, para. 52.
[315] Mexico's written submission, para. 52.
[316] Mexico's written submission, para. 53 (citing 2013 Final Rule, p. 31367).
[317] Mexico's written submission, para. 53.
[318] Mexico's written submission, para. 53.
[319] Mexico's written submission, para. 55.
[320] Mexico's written submission, para. 55 (citing J. M. Marsh, "Impacts of Declining U.S. Retail Beef Demand on Farm-Level Beef Prices and Production", *American Journal of Agricultural Economics*, Vol. 85 (November 2003), (Exhibit MEX-2, Appendix 8), pp. 902-913).
[321] Mexico's written submission, para. 55.
[322] Mexico's response to Arbitrator question No. 45, para. 94.

(c) the export quantity in the baseline period; and (d) the elasticity of Mexico's export supply.[323] This can be expressed using the following equation where Q_c and P_c are the observed quantity and export price of feeder cattle, ΔP is the estimated impact of the COOL measure on the export price of feeder cattle, and ε_e is the export supply elasticity[324]:

$$\Delta Q = \varepsilon_e \times Q_c \frac{\Delta P}{P}$$

5.119. While data on export price and export quantity in the baseline year are available, and the counterfactual change in export price was estimated econometrically, the elasticity of Mexico's export supply is the only parameter that remains to be determined.

5.120. Because the value for the elasticity of export supply is not directly available in the literature and is technically difficult to estimate empirically[325], Mexico derives its export supply elasticity of feeder cattle as a function of three variables: its own domestic supply and demand elasticities for feeder cattle and the share of exports of feeder cattle of Mexican supply. In mathematical terms, this formula can be expressed as follows where ω is the share of exports, ε_s is the elasticity of domestic supply, and η is the elasticity of domestic demand[326]:

$$\varepsilon_e = \frac{\varepsilon_s}{\omega} \times \frac{1-\omega}{\omega} \times \eta$$

5.121. We note that this is a well-established formula in the economic literature used for the calculation of export supply elasticities.[327] Ideally, using this formula would simply require inputting the relevant figures for Mexico's domestic supply and demand elasticities with a straightforward computation of its export share.

5.122. With regard supply and demand elasticities for feeder cattle, direct estimates of these elasticities are not available for Mexico. For this reason, Mexico uses estimates of long-run supply and demand elasticities for US feeder cattle. Mexico explains that "the supply elasticity of feeder cattle is determined by biological factors such as gestation period, and these biological factors are the same in the United States and Mexico".[328] Furthermore, Mexico argues that recent modernization of Mexican cattle industry and other factors "make[] the Mexican cattle industry more like that of the United States".[329] Thus, in Mexico's view, absent direct estimates for Mexican demand and supply elasticity, estimates for US demand and supply elasticities are reliable values of Mexican feeder cattle elasticities.

5.123. We note that the United States has not objected to the use of US demand and supply elasticities as a proxy for Mexican demand and supply elasticity values. Furthermore, the United States also considered estimates of US-based elasticities as proxies for Mexico's elasticity in its proposed methodology (i.e. EDM) to estimate the level of nullification or impairment.

5.124. Turning to the figure for the export share of feeder cattle (ω in the export supply elasticity formula), Mexico acknowledges that calculating the export shares of feeder cattle requires knowing Mexico's annual production of feeder cattle and exports to the United States. For this purpose, Mexico uses the figure of 1.11 million head of feeder cattle exports annually to the United States[330] and calculates an "annual beef calf crop in Mexico of 4.8 million heads".[331] These two figures are

[323] Mexico's methodology paper, Pouliot Study, p. 17, equation (5).
[324] Mexico's methodology paper, Pouliot Study, p. 17, equation (5).
[325] Mexico explains that it is not able to estimate the export supply elasticity econometrically because of the confounding effects from the drought and the COOL measure. Mexico's methodology paper, Pouliot Study, p. 18, footnote 4.
[326] Mexico's methodology paper, Pouliot Study, p. 18, equation (6).
[327] The United States acknowledges that "[t]he surplus supply (export) elasticity equation Mexico relied on its Methodology Paper is a standard equation that is reflected in the literature." United States' response to Arbitrator question No. 46, para. 85. See also Canada's response to Arbitrator question No. 46, footnote 42.
[328] Mexico's methodology paper, Pouliot Study, p. 19.
[329] Mexico's methodology paper, Pouliot Study, p. 19.
[330] See Mexico's methodology paper, Pouliot Study, p. 20 (citing data taken from the Economic Research Service of the USDA).
[331] Mexico's methodology paper, Pouliot Study, p. 20.

the basis for, respectively, the numerator and the denominator in Mexico's calculation of export share. Thus, Mexico explains that, "[a]ssuming that all feeder cattle in Mexico can be exported to the United States, with an annual crop of 4.8 million heads and exports of 1.11 million heads, yields ω_e = 0.23."[332] We note that the inputs for this calculation are themselves derived on the basis of various assumptions. In particular, Mexico relies on the assumption that the number of feeder cattle born and exported is the same in two consecutive years to estimate the annual beef calf crop production in 2012.

5.125. Apart from these considerations for deriving the necessary inputs, a fundamental assumption in Mexico's calculation of export shares is that "not all feeder cattle in Mexico are eligible for export".[333] According to Mexico, this is due to identification requirements, protocols to prevent importation of diseased animals, and quality considerations relating to different breeds of cattle in Mexico. In this regard, Mexico considers that value of ω = 0.75 "is reasonable given the description of the Mexican cattle industry provided in" studies of beef and cattle production in Mexico.[334] Mexico then calculates from this asserted export share of 0.75 that only 31 per cent of annual calf production (i.e. 31 per cent of the 4.8 million heads derived from the assumptions described above) is eligible for export to the United States (where 0.75 = 1.11/4.8*0.31). Thus, the share of 31 per cent of production that is eligible for exportation is simply assumed on the basis of what Mexico contends is a "reasonable" value for the export share of feeder cattle.

5.126. With regard to export share and export supply elasticity values submitted by Mexico, the United States argues that Mexico "appears to make unsupported assumptions about the rate of export, and ultimately with little explanation concludes that the export supply elasticity is 4. This elasticity exceeds the appropriate level."[335] The assumptions underlying Mexico's calculation of export shares are indeed integral to its derivation of the export supply elasticity with which it simulates the export quantity impacts of the COOL measure. At the same time, Mexico acknowledges that there are "no data that specifically describe […] the number of feeder cattle according to their breed".[336] We note that the sources relied upon by Mexico for its export share assumptions do reflect that certain breeds are more commonly exported.[337] However, the same sources indicate variation in this pattern and shifts from historical trading patterns that cast further doubt on the accuracy of Mexico's assertions about the share of export eligibility and, correspondingly, the actual share of those eligible cattle that are exported to the United States.[338] In our view, the United States' agreement[339] that some adjustment should be made to Mexico's export share does not amount to conceding that Mexico has correctly done so. Nor does it obviate the United States' contention that the elasticity value derived by Mexico exceeds the appropriate level.

[332] Mexico's methodology paper, Pouliot Study, p. 20.
[333] Mexico's methodology paper, Pouliot Study, p. 20.
[334] Mexico's methodology paper, Pouliot Study, p. 21.
[335] United States' written submission (Mexico), para. 84.
[336] Mexico's methodology paper, Pouliot Study, p. 20.
[337] D. Peel et al., "Cow-Calf Beef Production in Mexico", *Report from the Economic Research Service (USDA)*, LDP-M-196-01 (November 2010), (Exhibit MEX-2, Appendix 10), p. 16 ("Cattle for export are primarily of British/Continental breeding, generally with no more than three-eighths Zebu influence.").
[338] D. Peel et al., "Cow-Calf Beef Production in Mexico", *Report from the Economic Research Service (USDA)*, LDP-M-196-01 (November 2010), (Exhibit MEX-2, Appendix 10), pp. 16-17 ("Recently, the increased feasibility and lower costs of spaying heifers are such that, when U.S. cattle prices are cyclically high, a substantial number of heifers are also being exported. … Export origins, however, have changed over time and can be disrupted by regional health status. … When traditional export cattle sources are restricted, other regions make up some of the difference [and] a general improvement in cattle quality in many regions has narrowed the differences in quality; as a result, more cattle are suitable for export now than in the past."). The dynamic and evolving nature of Mexican cattle production and exportation is also reflected in the other study relied upon by Mexico. See D. Peel et al., "Trade, the Expanding Mexican Beef Industry, and Feedlot and Stocker Cattle Production in Mexico", *Report from the Economic Research Service (USDA)*, LDP-M-206-01 (August 2011), (Exhibit MEX-2, Appendix 11), p. 14 ("Cattle are sourced from all parts of Mexico, with a large majority of cattle in the northern half of the country either exported or fed in feedlots.").
[339] In particular, the United States considers that "Mexico correctly notes [that] the calculation of ω_e should take into account factors that affect Mexican feeder cattle exports as a share of Mexican feeder cattle supply", and that Mexico's "adjustment [to the export share] reflects the fact that not all Mexican feeder cattle are eligible to export and is consistent with other literature that describes the Mexican cattle industry." United States' response to Arbitrator question No. 46, para. 85.

5.127. We note that the export supply elasticity varies inversely with the export share of a product. Thus, a smaller export share of a product in relation to total supply will lead to greater export supply elasticities, and thus greater impacts on export quantities as a result of changes in the export price. Even if Mexico's assumed value of 31 per cent of export eligibility were correct, the question then becomes whether the share of exported cattle from the limited number of eligible cattle is no more than 75 per cent. If more than 75 per cent of cattle eligible for export were in fact exported, using an export share value of 0.75 would inaccurately inflate the export supply elasticity and, consequently, the export quantity impact. The same is true if the assumed value of 31 per cent of export eligibility overstates the share of annual calf production that can be exported. Had Mexico assumed that, say, only 20 or 10 per cent of cattle were eligible for export, the resulting export share would be greater and thus yield a lower export supply elasticity than 4 (as well as a lower impact on export quantities). In either of these scenarios, the export supply elasticity (and export quantity impact) would be overstated based on unverifiable assumptions about Mexican cattle production and exportation.[340]

5.128. Given the foregoing, we are of the view that export supply elasticity value of 4.0 submitted by Mexico is insufficiently supported by evidence for an assessment of whether Mexico's proposed level of suspension is equivalent to the level of nullification or impairment.

5.2.3 Data issues

5.129. In this section, we address a number of data issues that the United States has raised in challenging the reliability of Canada's and Mexico's calculations.

5.2.3.1 Use of data other than US Census Bureau import statistics

5.130. We begin with the United States' challenge concerning the use of data other than the official import statistics provided by the US Census Bureau, an entity within the US Department of Commerce.

5.2.3.1.1 Arguments of the parties

5.2.3.1.1.1 Canada's use of APHIS data

5.131. We note that Canada uses weekly data from the Animal and Plant Health Inspection Service (APHIS) of the USDA for purposes of identifying the quantities of all four categories of livestock exported.[341] Those quantities are used in the econometric estimation of the counterfactual export quantities as well as for the baseline values.

5.132. The United States challenges the use of weekly APHIS data, arguing that only official monthly data are accurate and appropriate.[342] Specifically, the United States claims that Canada relies on unofficial weekly cattle and hog import data derived from veterinary certificates collected by APHIS.[343] The United States explains that APHIS statistics are unofficial and are not subject to publically released corrections or revisions.[344] Furthermore, the fact that weekly data for cattle and hogs imports "is often revised and may not be reported for each week" causes overall data to be incomparable.[345] In addition, the United States argues that using weekly data is inappropriate because weekly data introduce "significant 'noise'" into the dataset, affecting the econometric

[340] Indeed, Mexico explains that alternative values for the export supply elasticity can be derived using other values for the export share. For example, using an export share of 1, which means that "all the feeder cattle that potentially could be exported to the United States are actually exported", generates a lower export supply elasticity of 2.82. Using an alternative assumption "that Mexico's export capacity to the United States equals its annual production of beef feeder cattle", the export supply elasticity rises to 14.77. Mexico's response to Arbitrator question No. 18, paras. 58-60. Thus, the derived elasticity value depends on assumptions about export eligibility in the computation of export share.
[341] Canada's methodology paper, Sumner Study, Appendix II, para. 188.
[342] United States' written submission (Canada), paras. 108-109.
[343] United States' written submission (Canada), paras. 108-109.
[344] United States' written submission (Canada), para. 108.
[345] United States' written submission (Canada), para. 109.

regressions and subsequent analysis.[346] The United States suggests using only official monthly import data provided by the US Census Bureau data, which are less "noisy".[347]

5.133. The United States re-ran Canada's econometric model using official US Census Bureau data, and after revising its initial iteration to fix certain methodological errors identified by Canada, the United States asserted that the use of APHIS data increases the estimate of export losses by almost double: the use of US Census Bureau data suggests that approximately 156,684 feeder cattle would have been exported per year, while the APHIS data used by Canada indicates that 306,176 feeder cattle would have been exported per year.[348] The United States suggests that this demonstrates that Canada's model is not robust, because a robust model would provide similar results regardless of the use of monthly or weekly data.[349]

5.134. Canada notes that APHIS data provide "four times as many data observations for export quantities than U.S. census data and therefore produces a more accurate and precise econometric calculation."[350] Furthermore, Canada relied on APHIS data previously, and the original panel "concluded that the data was acceptable and reliable."[351] Additionally, Canada argues that APHIS data are available "every week for many years in a consistent way" and are recorded by "an official government agency of the United States."[352] Canada emphasizes that "[f]or all animal categories, the quantity shipped into the United States has no missing values for any week."[353] Regarding "noise", Canada suggests that any random noise generated (if there is any) "tends to drive estimated coefficients towards zero, not make them seem larger and more significant".[354]

5.135. Canada notes that the data recommended by the United States "do not allow measures of export animal prices for animals precisely comparable to those for which there are domestic prices in the United States [meaning that] these monthly data are not suitable for price basis regressions and no analyst uses them for this purpose."[355] Additionally, "the data from USDA APHIS derives from actual border inspections of livestock shipments, whereas using Commerce Department data relies on reporting of total values of shipments and associated quantities. (Recall that these are reported by HTS code for items for which there is no import duty or other trade barrier other than animal health and COOL.)"[356] Additionally, Canada states that US Department of Commerce data are not available for fed barrows and gilts for immediate slaughter, a relevant category of livestock[357], and the US Department of Commerce data "mix fed hogs with old sows and boars shipped to the United States for slaughter and Canada is not claiming losses in respect of this trade."[358] Canada also heavily criticised a number of alleged methodological errors in the United States' initial attempt to replicate Canada's econometrics utilizing US Census Bureau data.[359]

5.2.3.1.1.2 Mexico's use of AMS data

5.136. We note that for purposes of its price estimation and its baseline values, Mexico uses weekly price data for Texas and New Mexico provided by the Agricultural Marketing Service (AMS)

[346] United States' written submission (Canada), para. 109.
[347] United States' written submission (Canada), para. 109.
[348] United States' opening statement at the meeting of the Arbitrator, para. 44-45; United States' comments on Canada's response to Arbitrator question No. 37, paras. 58-61.
[349] United States' opening statement at the meeting of the Arbitrator, para. 46; United States' comments on Canada's response to Arbitrator question No. 37, paras. 63-64.
[350] Canada's written submission, para. 51.
[351] Canada's written submission, para. 51 (citing Panel Report, *US – COOL*, paras. 7.444-7.463, 7.469-7.481, and 7.508-7.546).
[352] Canada's written submission, para. 52.
[353] Canada's written submission, para. 52.
[354] Canada's written submission, para. 53.
[355] Canada's response to Arbitrator question No. 37, para. 189.
[356] Canada's response to Arbitrator question No. 37, para. 190.
[357] Canada's response to Arbitrator question No. 37, para. 190.
[358] Canada's response to Arbitrator question No. 37, para. 190.
[359] Canada's response to Arbitrator question No. 37, para. 192-203.

within the USDA.[360] Mexico uses a monthly average price of two weight categories, 350lb and 550lb, representing the mid-point weights of two different weight categories.[361]

5.137. The United States characterizes Mexico's use of AMS pricing data as inaccurate and inappropriate.[362] The United States argues that such pricing data are not consistently reflective of the "types" of feeder cattle that are imported from Mexico due to heavy reliance on "auction data", which would not apply to feeder cattle from Mexico sold on the basis of "forward contracts or other pricing devices".[363] For this reason, the United States is of the view that weekly AMS data are likely to overestimate the baseline prices for cattle, resulting in an inaccurate and inflated price basis.[364] According to the United States, apart from the United States' own trade data, "Mexico's official trade data demonstrates that the per unit export value is much closer to the per unit U.S. import value that the U.S. Census [Bureau] reports."[365]

5.138. Mexico notes that the AMS data "offer an unbiased measure of the price paid for Mexican feeder cattle … The data provided by the AMS are appropriate for this analysis and in fact the United States used the same data source to calibrate its own EDM."[366] Mexico notes that the US Census Bureau data relied on by the United States use customs value to determine prices, which is *not* based on transaction value "where imported items have not yet been sold at the time of importation, which is the case for Mexican cattle that are brought across the border to be sold subsequently within the United States."[367] Mexico also states that the value of the cattle is irrelevant for customs purposes, since cattle are imported duty-free (under NAFTA) and even the United States' MFN duty rate "is appraised on the basis of animals' weight and not their value."[368] Thus, since unit-values based on customs value are not based on actual market transactions, they do not offer an accurate value of Mexican feeder cattle exported to the United States.[369] Furthermore, Mexico provides evidence that while "buyers and sellers may have verbal discussions prior to exportation … sales are finalized only after the cattle have crossed the border into the United States."[370] Mexico also asserts that the "Mexican cattle industry reports that almost all export transactions" are in the form of "ventas directas".[371]

5.139. Mexico also notes that: (a) AMS data and United States' census bureau data are broadly consistent up until 2011[372]; (b) a report published by the USDA in October 2014 demonstrates prices in New Mexico and Texas that are consistent with Mexico's pricing data[373]; and (c) the prices of Canadian feeder cattle for Canada's base-period (November 2013 to November 2014), as calculated by both Canada and the United States, "are much closer to the values calculated by Mexico for Mexican feeder cattle during the period 2014".[374] Mexico emphasizes that the United States customs data do not reflect real transaction prices. In support of its arguments, Mexico provides the following evidence: (a) sample invoices[375]; (b) evidence that USDA data are based on sales after importation[376]; (c) satellite imagery of a border crossing ranch facility[377]; and (d) a

[360] Mexico's methodology paper, Pouliot Study, pp. 9-10. Mexico converts the weekly data to monthly data.
[361] Mexico's methodology paper, Pouliot Study, pp. 9-10.
[362] United States' first written submission (Mexico), para. 80.
[363] United States' first written submission (Mexico), para. 80.
[364] United States' first written submission (Mexico), para. 80.
[365] United States' response to Arbitrator question No. 16, para. 71.
[366] Mexico's written submission, para. 50.
[367] Mexico's response to Arbitrator question no. 30(b), para. 84 (citing 19 U.S.C. § 1401a(b)(1)).
[368] Mexico's response to Arbitrator question No. 30(b), para. 84 (citing Harmonized Tariff Schedule of the United States, tariff item 0102.29.40).
[369] Mexico's response to Arbitrator question No. 30(b), para. 86.
[370] Mexico's response to Arbitrator question No. 58, para. 114.
[371] Mexico's response to Arbitrator question No. 58, para. 116.
[372] Mexico's response to Arbitrator question No. 30(b), para. 83 and figure 1.
[373] Mexico's response to Arbitrator question No. 30(b), para. 85.
[374] Mexico's response to Arbitrator question No. 30(b), para. 85.
[375] Mexico's comments on United States' response to Arbitrator question No. 59, para. 68.
[376] Mexico's comments on United States' response to Arbitrator question No. 59, para. 67.
[377] Satellite map of border crossing at Santa Teresa, New Mexico, (Exhibit MEX-46); see also Mexico's comments on United States' response to Arbitrator question No. 59, para. 69.

ruling of a United States Tax Court stating that cattle usually spend no more than eight hours on the United States' side of the border before being collected by buyers.[378]

5.2.3.1.2 Analysis by the Arbitrator

5.140. Calculating export revenues requires inputs of data on prices and quantities. In Canada's and Mexico's approaches to these calculations, data are needed not only for the "baseline" value (actual revenues in 2014), but also for the sample of observations used in the econometric estimation. The United States also needs data on baseline values for purposes of its calculations under an EDM. Thus, all calculations require price and export quantity information. The disagreement among the parties relates to the appropriate source from which that data should be taken.

5.141. The United States' position is that Canada and Mexico must use import statistics from the US Census Bureau rather than data from the USDA, namely APHIS and AMS. The United States itself relies on the US Census Bureau import statistics with regard to Mexican and Canadian baseline values.[379]

5.142. The fact that a party designates certain import statistics as the official source of trade data does not mean that Members are limited to using these particular data for purposes of calculating import figures. Nor are we as Arbitrator confined to reliance upon such statistics in carrying out our mandate. In our view, whether or not a specific source of data may be used for these purposes turns on whether the data are reliable and reflect as accurately as possible import quantities and/or import prices.

5.2.3.1.2.1 Canada's use of APHIS data

5.143. With regard to APHIS data, we refer to our conclusion above in section 5.2.3.1 that Canada's econometric quantity estimation does not adequately control for factors other than the COOL measure that affect export quantities. Therefore, we are unable to rely on Canada's econometric estimates of the quantity impact irrespective of the data used. Under the circumstances, it is unnecessary to further examine the use of APHIS data in respect of Canada's quantity impact estimation.

5.144. The issue that remains is whether APHIS data may be used for purposes of establishing baseline values. APHIS is an entity within the USDA and, thus, is a government source. We do not see a reason to consider data from this source to be inherently less reliable than the alternative source of US Census Bureau statistics. The question, in our view, is which data best reflect actual import quantities. We observe that the quantities identified by APHIS are generally lower[380], but differ only slightly from the quantities identified by the US Census Bureau.[381] Given that the differences are modest and, in addition, could be explained by inaccuracies in *either* source, we see no reason to consider the use of APHIS data to be any less accurate or reliable than US Census Bureau data.

5.145. As regards slaughter hogs, we note that there is a considerable discrepancy between the quantity reported by the United States and the quantity reported by Canada.[382] However, we observe that in its calculations, the United States uses only a percentage of the quantity reported.[383] The reason for doing so, according to the United States, is that the relevant tariff line from which the United States derived the overall quantity does not distinguish between barrows

[378] US Tax Court, T.C. Memo. 2000-357 (16 November 16 2000), (Exhibit MEX-48); see also Mexico's comments on United States' response to Arbitrator question No. 59, paras. 69-70.
[379] Guide to the COOL EDM, (Exhibit USA-4), p.2.
[380] The following APHIS values are taken from the Table attached to Arbitrator question No. 30: (unit: head) (1) Imports of feeder pigs: 4,095,688 (USA) and 3,916,714 (CAN); (2) Imports of slaughter hogs: 763,767 (USA) and 405,124 (CAN); (3) Imports of feeder cattle: 489,457 (USA) and 448,875 (CAN); (4) Imports of fed cattle: 403,357 (USA) and 389,811 (CAN).
[381] The baseline quantities exported differ by the following percentages when moving from APHIS data to US Census Bureau data: feeder pig exports increase by 4.57 per cent; fed hog exports decrease by 5.71 per cent; feeder cattle exports increase by 9.04 per cent; and fed cattle exports increase by 3.48 per cent.
[382] See COOL EDM worksheet with data, parameters, and equations, (Exhibit USA-3), tab 3.
[383] See Guide to the COOL EDM, (Exhibit USA-4), p. 2.

and gilts slaughtered to obtain muscle cuts (to which labelling requirements apply), and sows and boars slaughtered for other types of meat (to which labelling requirements do not apply).[384] In recognition of the broad scope of products included in source data, the United States uses only a percentage of the total for purposes of its calculations. Of interest is that the percentage is derived from APHIS data, confirming that the United States considers such data sufficiently accurate for this particular purpose.[385] It yields a number that differs only slightly from the actual APHIS number (382,000 heads as opposed to the 405,124 reported by Canada).[386]

5.146. Given the foregoing, we see no reason to conclude that APHIS data reports import quantities any less accurately than US Census Bureau data does. We therefore reject the United States' argument that Canada's use of APHIS data is inappropriate.

5.2.3.1.2.2 Mexico's use of AMS data

5.147. With regard to AMS data, we note that these data are generated by an entity within the USDA, and thus come from the same government source as do the APHIS data referred to above. As we observed earlier, we do not see a reason to consider this US government source to be any less reliable than the other US government source, which is the US Census Bureau (within the Department of Commerce), from which the import statistics are sourced. We observe in this regard that the United States itself partially relies on AMS data for purposes of identifying its own domestic price.[387]

5.148. The United States explains, however, that in respect of prices for Mexican cattle, AMS reporting relies on auction data, which would not apply to feeder cattle from Mexico sold on the basis of "forward contracts or other pricing devices."[388]

5.149. In response to this argument, Mexico submits evidence showing that the AMS data it relied upon covers 71 per cent of the total quantities of cattle exported to the Unites States.[389] Mexico also submits evidence to show that AMS prices closely correspond to sales prices in so-called "ventas directas" (direct sales).[390] A witness statement submitted by Mexico describes these direct sales as sales that take place once the cattle have crossed the border.[391] Further evidence submitted by Mexico demonstrates that exported cattle are picked up by buyers shortly after having crossed the border, which confirms that the prices paid are "fob" (as reported by AMS) and do not contain any US added value.[392] A further witness statement testifies that almost all export transactions are done through such direct sales.[393] Thus, on the basis of the evidence submitted by Mexico, it does not seem that AMS price data rely on any auction data at all; rather, they accurately reflect sales prices as agreed in the "direct sales", which are the main kind of cross-border transactions in cattle.

[384] United States' response to Arbitrator question No.30, para.116.
[385] United States' response to Arbitrator question No. 30(a). In footnote 146 to that response the United States refers to the "2014 Annual LPGMN Statistics Summary", an AMS publication. The "Hog Market Statistics" contained in this publication refer to "Canadian Swine Exports to US" citing APHIS as the source for these data.
[386] We note that this discrepancy may also be the result of different baseline periods used by Canada (November 2013 – November 2014) and the United States (calendar year 2014).
[387] See Guide to the COOL EDM, (Exhibit USA-4), p. 2.
[388] United States' written submission (Mexico), para. 80.
[389] Mexico's opening statement at the meeting of the Arbitrator, para. 11 and footnote 5. We note that the AMS price data submitted only cover New Mexico and Texas.
[390] Exhibit MEX-36 (BCI) and Comparison of invoices for Mexican cattle sold through direct sales to AMS, (Exhibit MEX-37).
[391] Statement of Confederación Nacional de Organizaciones Ganaderas of 14 September 2015, (Exhibit MEX-26).
[392] Mexico's comments on the United States' response to Arbitrator question No. 59. See also USDA Market News, AL_LS626 (3 October 2014), (Exhibit MEX-27) and US Tax Court, T.C. Memo. 2000-357 (16 November 2000), (Exhibit MEX-48).
[393] Statement of Confederación Nacional de Organizaciones Ganaderas of 30 September 2015, (Exhibit MEX-44).

5.150. The United States, on the other hand, submits that it has no information on what kinds of sales take place between Mexico and the United States.[394] Furthermore, the United States is unable to show that its own "unit value" as reported in the US Census Bureau import statistics reflects actual sales prices rather than just an "entered value", which, as the United States itself points out, "is not the value of a later sale when the animal is already in the United States".[395]

5.151. As noted above, any data used must reflect as accurately as possible import prices or import quantities. Mexico has submitted convincing evidence that AMS prices reflect actual import prices of Mexican cattle as accurately as possible, and in any event, more accurately than the "unit value" reported by the US Census Bureau.

5.152. In conclusion, we reject the United States' argument that the use of AMS pricing data by Mexico is inaccurate or inappropriate.

5.2.3.2 Canada's sample period in respect of its cattle specification

5.153. We note that, for purposes of the cattle specification in its econometric estimation of price as well as of quantity, Canada uses a sample period starting in September 2005 and continuing through January 2015.[396]

5.2.3.2.1 Arguments of the parties

5.154. The United States asserts that Canada's utilization of data between 2005 and 2015 fails to accurately evaluate the impact of the COOL measure, since "the 'pre-COOL' period used is concurrent with the BSE event and its lingering effects."[397] Since these and other factors ("such as the effects of additional BSE episodes") are unaccounted for by Canada, the United States contends that the model may misattribute effects to COOL that were caused by these other factors.[398]

5.155. Canada suggests that by July 2005 the impact of BSE was not important as "trade in fed and feeder cattle had resumed."[399] Since the original COOL measure was only implemented at the beginning of the fourth quarter of 2008, Canada considers that sufficient time had elapsed from the BSE event, "which had by that time been resolved for young cattle imports."[400] Additionally, Canada argues that lingering impact for older animals is resolved through the use of dummy variables.[401] At the request of the Arbitrator, Canada estimated the impact of extending the sample period to 2003. Canada noted that no export price data were available for the period due to the ban on cattle imports.[402] With respect to the quantity estimation, Canada noted that for fed cattle "[t]he impact of the amended COOL measure is just slightly smaller than in the base data set."[403] For feeder cattle, "[t]he COOL impact is just slightly larger than when the shorter sample is used for the regressions."[404]

5.2.3.2.2 Analysis by the Arbitrator

5.156. We concur with Canada, in respect of the econometric price estimation, that it is impossible to extend the sample period to 2003. The reason is that there are no price data for the period 2003 to 2005 given that a ban was in place due to BSE.[405] The question whether to extend

[394] United States' response to Arbitrator question No. 59, para. 104 ("For these reasons, U.S. Customs does not maintain information regarding the type of sales – auction, direct sale, or forward contract – that Mexican cattle are subject to.").
[395] United States' response to Arbitrator question No. 59, para. 102.
[396] Canada's methodology paper, Sumner Study, Appendix II, para. 192.
[397] United States' written submission (Canada), para. 110. See also United States' answer to Arbitrator question No. 15, para. 69.
[398] United States' written submission (Canada), para. 110.
[399] Canada's written submission, para. 54.
[400] Canada's written submission, para. 54.
[401] Canada's written submission, para. 54.
[402] Canada's response to Arbitrator question No. 62, para. 290.
[403] Canada's response to Arbitrator question No. 62, para. 293.
[404] Canada's response to Arbitrator question No. 62, para. 293.
[405] Canada's response to Arbitrator question No. 62.

the period to 2003 therefore only concerns the econometric quantity estimation.[406] We concluded above in section 5.2.3.1 that Canada's econometric quantity estimation does not adequately control for factors other than the COOL measure that affect export quantities, and thus cannot be relied upon as specified by Canada. Therefore, there is no need to make findings on whether the sample period for such estimation should be extended to 2003.

5.2.3.3 Starting dates for COOL dummy variables

5.157. We note that Canada, in its econometric estimation of price as well as of quantity, uses two dummy variables in its specification to account for the effect of the original and the amended COOL measures. The dummy variable for the original COOL measure has the starting date 29 September 2008. The dummy variable for the amended COOL measure has different starting dates depending on the livestock in question: 23 May 2013 for small-size feeder cattle and feeder pigs; 1 July 2013 for intermediate size feeder cattle; and 2 November 2013 for fed cattle and fed hogs.[407]

5.2.3.3.1 Arguments by the parties

5.158. The United States submits that Canada did not correctly define the time-periods to create the original and amended COOL measure dummy variables.[408] The United States recalls that the 2009 Final Rule "became effective on 16 March 2009", but that the dummy variable representing the original COOL measure (DCOOL1) takes the value of 1 after 29 September 2008.[409] Similarly, the United States notes that the dummy variable representing the amended COOL measure takes the value of 1 after 23 November 2013, while the amended COOL measure actually came "into effect" on 23 May 2013.[410]

5.159. Canada states that it used data for the initial impact of the original COOL measure as of the end of September 2008 since "the industry in the United States and Canada understood that the COOL measure would be expected to be in force."[411] The model is designed to show the impact of the COOL measure based on incentives to industry participants, and "[b]ased on comments from USDA and members of Congress, industry participants understood that they would be expected to comply with the original COOL measure … as of the end of September 2008."[412]

5.160. Regarding the amended COOL measure, Canada recalls that labelling was only enforced after 23 November 2013, six months after the announcement of the Final Rule.[413] A "period of education and outreach … lasted for six months" from May to November 2013, delaying enforcement and resulting in "no incentive for retailers to use a complex and costly new labelling regime until after 23 November 2013."[414]

5.2.3.3.2 Analysis by the Arbitrator

5.161. We note that the aim of Canada's and Mexico's econometric estimations is to observe the impact of the COOL measure on the export market for livestock. In other words, the methodology is intended to capture actual effects. These effects may or may not coincide with the formal entry into force of the measure.

5.162. In respect of the specification for the original COOL measure, we recall the panel's finding in the original proceedings in these disputes that "the COOL measure started to develop its effect in 2008, shortly after the United States' economic recession started in December 2007."[415] Furthermore, the United States has not rebutted Canada's assertion that industry participants had

[406] As Canada notes, the quantity can be indicated as 0 for the relevant period. See Canada's response to Arbitrator question No. 62.
[407] Weekly cattle data for econometrics, (Exhibit CAN-35); Weekly pig data for econometrics (Exhibit CAN-36).
[408] United States' written submission (Canada), footnote 125.
[409] United States' written submission (Canada), footnote 125.
[410] United States' written submission (Canada), footnote 125.
[411] Canada's written submission, para. 57.
[412] Canada's written submission, para. 58.
[413] Canada's written submission, para. 59.
[414] Canada's written submission, para. 59
[415] Panel Report, *US – COOL*, para. 7.508.

already begun to anticipate the COOL measure as early as September 2008, and started acting accordingly.[416] Recalling the rules on burden of proof, the notion that econometrics is intended to capture actual market effects, and the lack of support provided by the United States for its assertion, we are satisfied with Canada's definition of the original COOL dummy.

5.163. As for the amended COOL measure, the United States does not refute Canada's assertion of a period of "education and outreach" for the six months from May 2013 to November 2013, nor Canada's assertion regarding industry incentives to use the new, more costly labelling regime. We find Canada's explanation compelling and reject the United States' contention that the dummy variable representing the amended COOL measure was mis-specified.

5.3 Conclusion on Assessment of Proposed Level of Suspension

5.164. In this section we examined whether the United States successfully established that Canada's and Mexico's proposed levels of suspension are not equivalent to the level of nullification or impairment. We found this to be the case for the following reasons:

a. Canada's and Mexico's losses from domestic price suppression are not included in the nullification or impairment measured under Article 22 of the DSU; and

b. In respect of export revenue losses

   i. Canada's econometric estimation of price basis does not account for price impacts from differential transport costs,

   ii. Canada's invoice-based estimation of feeder pig prices is not reliable,

   iii. Canada's econometric estimation of quantity does not adequately control for relevant explanatory variables, and

   iv. Mexico's quantity simulation is based on an elasticity figure insufficiently supported by evidence.

5.165. We note, however, that among these flaws that we identified, not all are fatal to the methodology used, but can be addressed. This concerns in particular the inclusion of additional variables in a price estimation and the calculation of an elasticity figure in a quantity simulation. With these considerations in mind we turn to our own determination of the level of nullification or impairment.

6 THE ARBITRATOR'S OWN DETERMINATION OF THE LEVEL OF NULLIFICATION OR IMPAIRMENT

6.1 Introduction

6.1. As noted above in section 4, our mandate requires us to make our own determination of the level of nullification or impairment if we find that we cannot accept Canada's and Mexico's determinations.[417] In section 5 above, we found this to be the case and therefore now proceed to our own determination.

6.2. We recall that previous arbitrators, in devising their own approaches, have either based their approach on elements of the methodologies initially proposed by the parties[418], or have followed an altogether different approach.[419] As explained in section 4.2 above, we decided to examine all aspects of the methodologies used by Canada and Mexico in order to identify any valid elements

[416] See United States' written submission (Canada), footnote 125 ("Though Canada vaguely notes that this is when COOL began to affect imports, this is clearly inaccurate and the variable should not be implemented until after March 16, 2009.").
[417] Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, para. 35.
[418] See Decision by the Arbitrator, *US – Gambling (Article 22.6 – US)*, para. 3.174.
[419] Decision by the Arbitrator, *US – Offset Act (Mexico) (Byrd Amendment) (Article 22.6 – US),* paras. 3.69-3.79.

that we could use in our own determination, if necessary. In our summary to section 5 above, we have identified these elements.

6.3. As noted in section 3.3 above, the United States disagreed with the methodologies of both Canada and Mexico and proposed its own, alternative methodology to estimate the counterfactual export revenue loss, namely a partial equilibrium model in the form of an equilibrium displacement model (EDM).[420] We now turn to examining this methodology in order to see whether it is a possible alternative to working with elements from Canada's and Mexico's methodologies. As we observed above in section 4, any determination of nullification or impairment, because it is based on assumptions, is necessarily a "reasoned estimate" relying on "credible, factual, and verifiable information".[421] This being the case, no methodology is perfect. The goal is to provide a reasoned estimate that is as accurate as possible. In our assessment of Canada's and Mexico's methodologies we have already discussed the strengths and weaknesses of these approaches as well as the reliability of the data used for their calculations. Our analysis of the EDM proposed by the United States will assess the strengths and weaknesses of that methodology in order to weigh them against those already identified for Canada's and Mexico's methodologies. On the basis of this comparative assessment, we will adopt the approach that we consider best suited in this case to providing our own reasoned estimate that is as accurate as possible.

6.2 Description of the EDM methodology

6.4. We briefly describe the main elements of the EDM methodology used by the United States.

6.5. An EDM is a partial equilibrium model representing a system of demand and supply relationships of a specific market or various markets forming supply chains – here the United States' livestock and meat markets. An EDM simulates the changes in prices and quantities in all the modelled markets that arise when the system equilibrium is displaced because of an exogenous shock – in this case the removal of the COOL measure and its associated compliance costs.[422]

6.6. The United States models the US market for livestock (cattle and hogs) and meat (beef and pork) by specifying a multi-animal and multi-sector EDM.[423] In particular, five stages of the cattle/beef and hogs/pork production and marketing chain are modelled: (1) farm: cow-calf and farrowing (i.e. feeder cattle/pigs); (2) slaughter: finishing (i.e. fed cattle/hogs); (3) wholesale: packing (wholesale-level beef/pork); (4) retail (retail-level beef/pork) and (5) consumers. For each step in the production and marketing chain, up to four types of equations are used.[424]

6.7. In its model, the United States considers the different elasticities and the policy change (i.e. the removal of the compliance costs of the COOL measure) as exogenous parameters. Such an approach is standard in an EDM, which rests on the assumption that the elasticities of the endogenous supply and demand relationships (i.e. prices and quantities) are known. An EDM also assumes that compliance costs of the COOL measure are known ("cost wedge")[425].

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[420] The role of this alternative methodology in the United States' burden of proof was discussed in section 4.2 above. We found that, in simply proposing an alternative methodology, the United States did not engage with the Canada's and Mexico's methodologies and, therefore, did not validly establish a *prima facie* case against the levels of suspension proposed by Canada and Mexico.

[421] Decision by the Arbitrators, *US – 1916 Act (EC) (Article 22.6 – US)*, para. 5.54; see also Decision by the Arbitrator, *EC – Hormones (US) (Article 22.6 – EC),* para. 41.

[422] United States' written submission, paras. 33-35.

[423] United States' written submission, para. 34; COOL EDM worksheet with data, parameters, and equations, (Exhibit USA-3); Guide to the COOL EDM, (Exhibit USA-4). Overall, the model developed by the United States includes 39 equations.

[424] The four types are: (1) Identity equations which specify the market clearing conditions of the different markets in the marketing chain, namely that total supply is equal to total demand in each market in the marketing chain for pigs/pork and cattle/beef; (2) "Price equations" which specify the relationship among prices at different points in the marketing system; (3) "Value-added equations" which specify the mark-up applied over the price of livestock/meat at the finished, wholesale, and retail levels, over the price at the previous level (feeder, finished, and wholesale, respectively); (4) "Structural equations" which are the core of the EDM and consist of local linear approximation of the supply and demand functions in the United States' livestock and meat markets in terms of difference (i.e. change from two equilibria).

[425] United States' response to Arbitrator question No. 4, para. 20.

6.8. As for the elasticity parameters, the United States borrows the value of most of these parameters from previous research and academic literature. For the elasticities for which there is no readily available information, the United States makes additional assumptions in order to use the values of other elasticities as proxies. For instance, since there is no available information on the supply elasticities for US imports of feeder or slaughter animals, the United States assumes that the supply elasticities for US imports of feeder or slaughter animals – for which there is no available information – take the same value as the supply elasticity for US imports of wholesale meat imports.[426]

6.9. As for the compliance costs, the United States derives the compliance costs of the original and amended COOL measures at the different stages of the supply/marketing chain using the estimates provided in the 2009 and 2013 Regulatory Impact Analyses (RIA) conducted by the USDA.[427] In particular, the United States makes the assumption that the compliance costs to provide country-of-origin information on Canadian and Mexican livestock are the same as the compliance costs to provide such information for US-origin livestock.[428]

6.2.1 Arguments of the parties

6.10. Canada and Mexico both criticize the United States' approach for relying on simulation where actual observed data are available to measure the impact of the COOL measure.[429] Mexico suggests that EDMs "are not a standard approach for use in an *ex post* analysis when data are available."[430] Similarly, Canada points out that "in an analysis where data on actual results caused by policy changes are observed, it is feasible and preferable to conduct an assessment of actual outcomes", for instance through the use of econometrics.[431]

6.11. Furthermore, Canada and Mexico highlight a number of assumptions relied upon in standard EDMs including the EDM used by the United States. Canada notes that broad general assumptions include: perfect competition; that all sources of animals are used in all markets by all plants and firms; no substitution in processing; constant returns to scale; a "key assumption that implies only tiny changes on livestock of all origins"; perfect market equilibrium before and after the COOL measure; full equilibrium with the COOL measure in place; and "full equilibrium and all adjustment completed under the 'but for COOL' counterfactual".[432] According to Canada, these assumptions fail to capture reality, resulting in an unrealistic estimate of nullification or impairment.[433]

6.12. Canada and Mexico also take issue with the United States' choice of elasticities, arguing that the elasticities used in the model are "inappropriate to measure the full impacts" of removing the COOL measure.[434] Canada and Mexico both assert that the United States' reliance on short-run elasticities is misplaced, since the EDM "assumes that a new full equilibrium is established in all markets and no further adjustment is underway."[435] Canada and Mexico also challenge the United States' choice of wholesale meat import elasticities as a proxy for feeder and slaughter livestock import supply elasticities.[436] Mexico notes in particular that the United States lacks any "economic rationale" to use wholesale meat import elasticity as a proxy for feeder and slaughter animal import elasticities.[437] Canada also notes that the United States relies on elasticities that were

[426] United States' written submission, para. 45.
[427] United States' written submission, paras. 47-58.
[428] United States' written submission, para. 56 (noting that "RIA costs were developed with the understanding that all entities, whether in the United States or elsewhere, would face similar tasks and direct costs regardless of their location (e.g., the cost of recordkeeping in the United States is similar to the cost of recordkeeping in Canada)").
[429] Canada's written submission, para. 63; Mexico's written submission, para. 19.
[430] Mexico's written submission, para. 20.
[431] Canada's written submission, para. 63.
[432] Canada's written submission, para. 76.
[433] Canada's written submission, paras. 78-79.
[434] Canada's written submission, para. 83; Mexico's written submission, para. 32.
[435] Canada's written submission, para. 85. See also Mexico's written submission, para. 32 ("complete removal of the COOL measure would require a period of adjustment that exceeds one year").
[436] Canada's written submission, para. 85; Mexico's written submission, para. 34.
[437] Mexico's written submission, para. 34. Mexico argues to the contrary that supply elasticities of downstream inputs will impact upstream products' supply elasticities, which suggests that there *would* be a difference. Mexico's written submission, para. 34.

"ironically" determined econometrically, but using "inappropriate" methods and decades-old data.[438]

6.13. Canada's and Mexico's main criticism against the United States' EDM, however, concerns the approach that the United States has taken on the compliance cost parameter (which, as noted above, is based on RIA data). Canada and Mexico identify as "a fundamental flaw" the EDM's failure to model segregation of livestock according to origin, which is the fundamental discrimination and cost-imposition caused by the COOL measure.[439] Canada and Mexico note that the United States models the removal of compliance costs, which "apply to all animals equally".[440] Canada and Mexico also highlight equations (18) to (23) in the United States' model which, according to Canada and Mexico, respectively, are based on an "inappropriate" or "implausible" assumption: that the impact of the removal of the COOL measure on prices of imported livestock is identical to the impact on prices of US-origin livestock.[441] As Mexico states, the requirement to differentiate animals "according to their origins impose[s] additional costs that can be averted by using animals of a single origin, which is precisely why the COOL measure has a differential impact in the price of imported Mexican cattle. Equations (18) to (23) simply assume away this reality."[442]

6.14. The United States asserts that an EDM is a more suitable model than econometrics, since it takes account of the complexities of the livestock market by specifying individual supply and demand curves at all relevant levels of production.[443] Additionally, it avoids the problem of variable omission which is prevalent in econometric estimations for complex markets.[444] Regarding differential costs, the United States acknowledges the previous panel and Appellate Body findings but submits that its applied import elasticities capture and measure the differential costs.[445] It notes that the Informa Report "purport[s]" to provide differential costs.[446] However the United States also recalls the original panel's doubts about the accuracy and verifiability of the Informa Report.[447] Regarding elasticities, the United States asserts that short run elasticities should be used, given that (1) "[t]he elasticities fit the length of time the amended COOL measure has been in place", and (2) " the cost wedges used in the EDM explicitly reflect implementation costs."[448]

6.2.2 Analysis by the Arbitrator

6.15. As Canada and Mexico point out, unlike econometric estimation, simulation does not rely on actual observed data other than for the purposes of establishing baseline values. While we take Canada and Mexico's point that such data, if and when available, should be used, we also see that there may be advantages of not having to do so. As the discussion on the econometric estimation in section 5.2 shows, working with actual observed data can require accounting for possible factors that may have impacted on price or quantity, which may not be possible, as we have concluded in respect of Canada's econometric quantity estimation. Indeed, Mexico chose to estimate quantity through simulation for this reason. Thus, we would not dismiss the use of an EDM solely on the grounds that it is a model that does not rely on actual observed data.

6.16. Another concern raised by Canada and Mexico is that an EDM relies on a number of assumptions that may not correspond to the reality of the markets or the effects that it simulates in those markets. We are not convinced by this argument. Reliance on a presumption of *ceteris paribus* is not only standard for many economic models, but is also a requirement of an EDM that

[438] Canada's written submission, para. 83.
[439] Canada's written submission, para. 67-68; Mexico's written submission, para. 25.
[440] Canada's written submission, para. 73. See also Mexico's written submission, para. 26 ("the United States' model assumes that the costs of COOL are the same for animals of all origins").
[441] Canada's written submission, para. 72; Mexico's written submission, para. 29.
[442] Mexico's written submission, para. 29, Canada argues along the same lines. See Canada's written submission, paras. 72-73.
[443] United States' oral statement, para. 71.
[444] United States' opening statement at the meeting of the Arbitrator, para. 72.
[445] United States' written submission, para. 57. See also United States' response to Arbitrator question No. 26, para. 101.
[446] United States' response to Arbitrator question No. 26, para. 101.
[447] United States' response to Arbitrator question No. 26, para. 101 ("the panel noted that the 'Informa Report is silent on its methodology and the sample considered (*i.e.*, time period, geographical zone, number of firms surveyed),' and thus is not 'reliable and precise as regards its exact quantification of the costs of the COOL measure'" (quoting Panel Reports, *US – COOL*, para. 7.499)).
[448] United States' opening statement at the meeting of the Arbitrator, para. 76.

aims to isolate the impact of a change in a single variable (in this case compliance costs) at the different levels of the supply chain as a result of an economic action (in this case the removal of the COOL measure).[449] An EDM is a tool that is widely used to assess the impact of a particular action, including by previous arbitrators.[450]

6.17. However, we do have some concerns with respect to one basic assumption of the United States' EDM, namely that the displacements are restricted to occur within proximity of the equilibrium. In other words, the removal of the COOL measure is implicitly assumed to have a relatively small impact on export price and quantities. As we understand it, the small impact assumption is a necessary implication of the way the supply and demand functions have been linearly approximated by the elasticities. Indeed, the larger the impact *actually* is, the more likely an EDM is to over- or under-estimate the new equilibrium. This is not an issue that can be resolved since it is structurally inherent in the model. While this issue alone may not be a sufficient reason to discard the United States' EDM completely, it does raise concerns about the accuracy of the EDM in this particular context where it cannot be excluded *a priori* that the COOL measure had a large impact.

6.18. We also note two particular concerns raised by Canada and Mexico regarding the use of elasticities, namely: (1) the United States' use of short-run elasticities rather than long-run elasticities, and (2) the United States' justification for using wholesale meat import elasticities as a proxy for feeder and slaughter livestock import elasticities. On the first issue, it suffices to note that the debate is about two alternative, available options (short or long-run) and, therefore, not about precluding the application of an EDM *per se*. In other words, the choice of short or long-run elasticities is an issue that can be resolved, if need be, when deciding subsequently on exactly what data inputs would be appropriate. That determination would only take place if the Arbitrator were convinced that an EDM would yield a more accurate result than any other method.[451]

6.19. On the second issue, we share Canada's and Mexico's concerns about using wholesale meat import elasticities as a proxy for livestock import elasticities. We note that the United States' choice to use a proxy elasticity is premised on the notion that it is not possible to estimate the livestock import elasticities econometrically. However, as has been discussed above in section 5.2.2.2, it is possible to estimate elasticities through other techniques.[452] It is evident that proxy data inputs should be relied on only when more appropriate data are unavailable. We observe that it is possible to calculate the export supply elasticities for livestock in the present case; at this stage, it remains unnecessary for us to determine the precise elasticities that would be entered into an EDM.

6.20. This brings us to the last, and in our view, most important point, which is the difficulty of properly accounting for the differential compliance costs resulting from the COOL measure. It would not be justifiable for us to rely on a model that does not properly account for the discriminatory effects of the COOL measure that have been found in these disputes to exist both by the original panel and the compliance panel (and confirmed in both instances by the Appellate Body).[453] Indeed, as noted previously in this Decision, our mandate requires us to determine the level of nullification or impairment resulting from the WTO-inconsistency, which in this case turns

[449] United States' written submission (Canada), para. 30.

[450] Decision by the Arbitrator, *US – Upland Cotton (Article 22.6 – US II)*, para. 4.2.

[451] As discussed in sections 4.2 and 4.3 above, we view the United States' proposed methodology differently than the methodology proposed by Canada and Mexico. The United States' proposed methodology is merely one possible methodology to be considered by us when making our own determination of the level of nullification or impairment.

[452] We note that Mexico in its initial methodology did indeed calculate an export supply elasticity for feeder cattle. While we disagree with the specific calculation that Mexico undertook (see our conclusion above in section 5.2.2.2), we note that there are sufficient data available to apply Mexico's formula to calculating a revised elasticity for Mexico. In addition, as discussed further below, we believe that Mexico's formula could also be applied to Canadian livestock categories in order to determine Canada's relevant export supply elasticities. Finally, we note that the United States itself acknowledges that, in its literature review of export supply elasticities for Canadian livestock, most of the elasticities were "based on the same methodology that Mexico presents in its paper." Far from contesting Mexico's formula, the United States acknowledges that "[t]he surplus supply (export) elasticity equation Mexico relied on in its Methodology Paper is a standard equation that is reflected in the literature." See United States' response to Arbitrator question No. 46, para. 86.

[453] Appellate Body Reports, *US – COOL*, para. 257; see also Panel Reports, *US – COOL*, para. 7.279; *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.66.

exclusively on the COOL measure's detrimental impact on imported livestock as compared to domestic livestock. In particular, the detrimental impact has been identified as resulting mainly from (1) differential costs arising from segregation and (2) incentives for processors to use domestic livestock.[454] It would be contrary to our mandate to make a determination of nullification or impairment that did not account for these differential effects as accurately as possible.

6.21. The United States confirms that the costs applied in the EDM model it initially submitted are compliance costs that are assumed to be the same "for all entities, whether in the United States or elsewhere".[455] It argues, however, that:

> [T]he EDM recognizes (and structurally can model) differential impacts [that] are present. The EDM imposes different elasticities for imported and domestic livestock. In particular, the import supply elasticities translate into a differential and more severe impact on imported livestock. This difference reflects the differential compliance costs imposed on Canadian and Mexican livestock suppliers.[456]

6.22. We are not convinced by this argument. It is apparent from the United States' own statements throughout these arbitration proceedings that *costs* and *elasticities* are distinct concepts, and that costs are the relevant variable of interest in a correctly specified EDM in this case. The United States correctly states that "the supply of imported animals is more elastic than U.S. domestic supply, which means that when COOL costs are removed, the effect will be greater on U.S. import supply than it will be on U.S. domestic supply."[457] However, this greater "impact" does not reflect the differential *cost* of the COOL measure, only a differential *result* based on costs that the United States has acknowledged are assumed to be non-differential. Such a cost input clearly contradicts the findings of the original panel, the compliance panel, and the Appellate Body.[458] Consequently, we disagree with the United States that different elasticity values accurately capture the differential costs of COOL on foreign producers compared with domestic producers.

6.23. Differential compliance costs, and more specifically segregation costs, therefore need to be accounted for on their own terms. In response to written questions of the Arbitrator, the United States submitted a revised EDM in which the "cost wedge" reflected differential compliance costs.[459] The data for defining this parameter are taken from the Informa Economics Report, which Canada had submitted in the original proceedings and which both Canada and Mexico re-submitted in these proceedings.[460] Leaving aside any concerns with this data source[461], we note that Informa data only cover differential compliance costs of the *original* COOL measure. While the parties have acknowledged that the Informa costs do reflect the differential costs resulting from the original COOL measure, no data have been made available to us that would reflect differential costs resulting from the *amended* COOL measure. We recall that the compliance panel found that the amended COOL measure "entails increased detrimental impact on imported livestock".[462] The differential compliance costs for the amended COOL measure, therefore, cannot simply be assumed to be the same as for the original COOL measure. As noted above, we consider that our

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[454] Appellate Body Reports, *US – COOL*, para. 257; see also Panel Reports, *US – COOL*, para. 7.279; *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.66.

[455] United States' response to Arbitrator question No. 26 ("…the Regulatory Impact Analysis (RIA) costs were developed with the understanding that all entities, whether in the United States or elsewhere, would face similar tasks and direct costs regardless of their location (*e.g.*, the cost of recordkeeping in the United States is similar to the cost of recordkeeping in Canada)").

[456] United States' response to Arbitrator question No. 26, para. 100. See also United States' written submission, para. 57. (footnote omitted)

[457] United States' response to Arbitrator question No. 43, para. 74.

[458] Appellate Body Reports, *US – COOL*, para. 257; see also Panel Reports, *US – COOL*, para. 7.279; *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.66.

[459] United States' response to Arbitrator question No. 26.

[460] Informa Economics, *Update of Cost Assessments for Country of Origin Labeling – Beef & Pork (2009)* (June 2010), (Exhibits CAN-55 and MEX-9).

[461] As the United States correctly points out, the original panel in this dispute stated the following concerns: "However, the Informa Report is silent on its methodology and the sample considered (i.e. time period, geographical zone, number of firms surveyed). Accordingly, we cannot assess with sufficient certainty whether the Informa Report is reliable and precise as regards its exact quantification of the costs of the COOL measure." See Panel Reports, *US – COOL*, para. 7.499.

[462] Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, para. 7.176.

mandate requires us to account for the discriminatory effects of the COOL measure as accurately as possible. Therefore, the practical impossibility to do so in the EDM due to the lack of relevant data is reason enough for us not to use the EDM.

6.24. In sum, we note that the fact that the EDM does not rely on actual observed data, but rather on simulation, may well be an advantage, particularly in situations where methodologies using actual observed data cannot fully account for all factors that impact price or quantity. Making use of that advantage, however, entails having to make a number of assumptions, at least one of which (namely the small impact assumption) we consider to be potentially problematic in this case. It would also require resolving concerns related to the elasticities to be used for the products detrimentally impacted, namely livestock. However, the most important aspect that weighs against using the EDM is that there are no data to account for the differential costs of the amended COOL measure for imported livestock.

6.25. For the foregoing reasons, and in particular the lack of data accounting for the discriminatory effects of the COOL measure, we rule out use of the United States' EDM for the purposes of our own determination.

6.3 Arbitrator's own calculation of nullification or impairment

6.26. In this section we describe the approach that we consider best suited to determine the level of nullification or impairment as accurately as possible, based on our findings and considerations regarding the three parties' methodologies. It is because we are unable to accept aspects of their methodologies that we now proceed with our own calculations in order to fulfil our mandate under the DSU. Applying this approach, we make our own determination of the level of nullification or impairment incurred by Canada and Mexico. The actual calculations are set out in Annex C to this Decision.

6.3.1 Overview of the methodological approach

6.27. In accordance with our finding above in section 5.1, we measure Canada's and Mexico's lost export revenues. We do so by using Canada's and Mexico's basic formula which defines the export revenue loss as the difference between the export revenue with and without the COOL measure. To calculate the counterfactual revenue ("without the COOL measure"), like Canada and Mexico we estimate price and quantity separately.

6.28. In estimating price and quantity, we follow Mexico's two-stage approach. Thus, we first estimate the price change and then derive the quantity effects from that price change by way of an elasticity-based simulation.

6.29. Our price estimation, in line with Canada's and Mexico's approach, is based on an econometric estimation of the impact of the COOL measure on the price basis. As seen above, we consider that the impact of transport costs needs to be accounted for in Canada's price basis estimation (whereas this is not necessary in Mexico's price basis estimation as Mexico uses the direct price of Mexican cattle in the United States). We, therefore, include a transport variable in the price basis estimation for Canada only. Furthermore, with regard to both Canada's and Mexico's price basis estimation, we control for omitted variable bias by focusing on the variables discussed above in section 5.2.1.2.

6.30. In respect of the quantity estimation, we calculate new elasticities both for Mexico, whose elasticity figure we rejected in section 5.2.2.2 above, and for Canada, whose proposed elasticity figures we cannot accept for reasons further discussed below. We use the formula that all parties in this arbitration have recognized as appropriate to calculate export supply elasticities. In applying this formula, we need to decide on whether to use long-run or short-run elasticity values.[463] We note that long-run elasticities account for the period necessary for "full adjustment" from a given

[463] The question of long-run versus short-run was also relevant in the context of applying elasticities in the EDM. However, as we decided not to rely on the EDM, we did not need to decide on the use of short-run or long-run elasticities, nor did we need to address the implications of the counterfactual in that context. See section 6.2 above.

change, whereas short-run elasticities reflect incomplete adjustment in the period immediately following the change.[464]

6.31. We are conscious that this question is tied to the counterfactual. In essence, the difference between long-run and short-run lies in reading "without the COOL measure" as meaning "as if the COOL measure had never existed" (long-run) or meaning "as if the COOL measure had been withdrawn at the end of the RPT" (short-run). We note that the United States did not contest Mexico's long-run approach and that Mexico did not rebut the United States' repeated assertions that the counterfactual concerned "the measure withdrawn".[465]

6.32. For purposes of our own determination, we follow the counterfactual of the COOL measure having been withdrawn at the end of the RPT. We note that this is consistent with the approach adopted by previous arbitrators.[466] Therefore, we apply short-run elasticities to simulate the adjustment of livestock export quantities in the baseline year following the counterfactual withdrawal of the COOL measure (and its econometrically estimated export price impacts) in May 2013.

6.33. We set out below the details of our model specifications and data that we use to calculate the level of nullification or impairment.

6.3.2 Price basis estimation

6.34. In order to estimate econometrically the impact of the COOL measure on the price basis, we specify the dependent variable – the price basis – in a dynamic model. This is the same approach used by both Canada and Mexico in their analyses of the effect of the COOL measure on the price basis. As mentioned on several occasions throughout this Decision, Canada and Mexico define the price basis differently. Canada defines the price basis as the difference between the export price of

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[464] We also refer to the description used by the arbitrator in *US – Upland Cotton (Article 22.6 – US II)*, which is as follows:

> [T]he concepts of short-run and long-run relate to the process of economic adjustment arising from the exogenous change in the economic environment. The long-run essentially refers to a situation where all adjustments by producers, consumers, and owners of factors of production to the given change have been completed and the market has settled down to a (long-run) equilibrium. The short-run refers to a situation, which could be one of (short-run) equilibrium, where the process of adjustment by producers, consumers and owners of factors of production has not been fully completed. This less than complete adjustment in the economy may be the result of certain rigidities in the market or simply that it takes time for producers to re-allocate resources. (See Decision by the Arbitrator, *US – Upland Cotton (Article 22.6 – US II)*, para. 4.144)

[465] Mexico describes the counterfactual in the following terms: "if the COOL measure had not been adopted" and "if the COOL measure was never in place", Mexico's methodology paper, Pouliot Study, p. 3; "had never been implemented", Mexico's methodology paper, Pouliot Study, p. 16. We note that Mexico requested authorization from the DSB to suspend concessions equal to "the nullification or impairment of benefits accruing to Mexico, resulting from the United States' failure to bring its COOL measure in compliance by 23 May 2013 or otherwise comply with the recommendations and rulings of the DSB". WT/DS386/35, p. 2. The United States describes the counterfactual in the following terms:

> "The appropriate counterfactual is not, as Canada suggests, a comparison between a baseline period and what the level of trade would be 'if no WTO-inconsistent COOL requirements <u>*had ever*</u> been applied by the United States.' A Member whose measure has been found to be inconsistent with a covered agreement is to bring that measure into conformity. And a Member may have a reasonable period of time in which to do so. The Member is not required to restore the *status quo* as it existed prior to the adoption of the measure. Rather, the appropriate counterfactual is one where the amended COOL measure is brought into conformity." See United States' opening statement at the meeting of the Arbitrator, para. 8. (emphasis original)

See also Canada's description of the counterfactual: "but for the amended COOL measure", Canada's methodology paper, Sumner Study, para. 6; "if the amended COOL measure had not been in place", Canada's methodology paper, Sumner Study, para. 12; "without the amended COOL measure", Canada's methodology paper, Sumner Study, para. 17.

[466] See Decision by the Arbitrators, *EC – Hormones (US) (Article 22.6 – EC)*, para. 38. We also note that the arbitrator in *US – Upland Cotton (Article 22.6 – US II)* also considered the use of short-run elasticities as appropriate, albeit under the different legal standard of Article 7.10 of the SCM Agreement, which requires the arbitrator to establish whether the proposed "countermeasures are commensurate with the degree and nature of the adverse effects determined to exist". See Decision by the Arbitrator *US – Upland Cotton (Article 22.6 – US II)*, para. 4.147.

Canadian livestock in Canada and the price of United States' livestock in the United States[467], while Mexico defines the price basis as the difference between the price of exported Mexican livestock in the United States and the price of United States' livestock in the United States.[468] As a result, our specification of Mexico's price basis will be slightly different from Canada's specification to reflect this different definition.

6.3.2.1 Canada's price basis specification

6.35. We estimate the effect of the COOL measure on the price basis using the following linear regression equation:

$$P_{CAN,t} - P_{US,t} = \alpha + \beta Z_t + \gamma_1 COOL1 + \gamma_2 COOL2 + \delta\left(P_{CAN,t-1} - P_{US,t-1}\right) + e_t$$

where $P_{CAN,t}$ is the price of Canadian livestock exported to the United States at time t, $P_{US,t}$ is the livestock price in the United States at time t, COOL1 is a dummy (that is a variable taking the value of 0 or 1) for the original COOL measure, and COOL2 is a dummy for the amended COOL measure. We define these dummy variables as they are defined in Canada's regressions, namely: COOL1 takes a value of 1 after 29 September 2008; COOL2 takes a value of 1 after 23 May 2013 for small size feeder cattle and for feeder pigs, after 1 July 2013 for intermediate-size feeder cattle, and after 2 November 2013 for fed cattle and fed hogs. Finally, e_t is the random error term.

6.36. Z_t is a vector of control variables. Like in Canada's specification, we include monthly dummies to control for seasonality, and for changes in the exchange rate, as well as dummies for Canadian cattle-specific events (such as the BSE) and dummies in the equations for Canadian pigs for the closure of a hog processing plant.

6.37. Our set of control variables also includes a number of additional variables to address concerns regarding variable omission. As explained in section 5.2.1.2, we are of the view that transport costs are a relevant variable in the determination of the price basis, when the price basis is measured as the difference between the export price in Canada and the US price. Therefore, in our econometric model for Canada, we use transport costs as an explanatory variable. We acknowledge that the variable of transport cost presents a unit root.[469] We are aware that one option to solve the problem is to consider the variable in first difference (that is, using a measure of the variation of transport costs rather than the level of transport costs). However, taking transport costs in first difference, while solving the unit root problem, would not yield a useful interpretation because the level (not the first difference) of transport costs is a direct determinant of trade barriers measured by the price basis. Hence, we estimate a model with a non-stationary explanatory variable, keeping in mind that this may affect the statistical significance of regression coefficients, but relying on the fact that "the presence of variables with a unit root does not bias regression coefficients".[470]

6.38. In addition, we include variables to control for changes in transport costs, the recession, changes in feed costs and in the level of competing imports, drought events as well as the spread

[467] See, e.g. Canada's response to Arbitrator question No. 6, para. 18 ("Canada uses prices in Canada (rather than those within the United States) for estimating price basis impacts because those data ensure that the econometric specification used by Canada most accurately estimates the impact of the amended COOL measure on the prices of livestock in Canada.").

[468] See, e.g. Mexico's opening statement at the meeting of the Arbitrator, para. 15 ("The estimate of the COOL measure's impact on the price of Mexican feeder cattle exported to the United States uses a basis calculated as the difference in the price of Mexican feeder cattle measured in the United States and the price paid for U.S. feeder cattle in the United States.").

[469] See United States' response to Arbitrator Question No. 35, para. 42.

[470] S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014), (Exhibit USA-35), p. 113. We also refer to the published econometric book by Banerjee, Dolado, Galbraith and Hendry, *Co-Integration, Error Correction, and the Econometric Analysis of Non-Stationary Data* (Oxford University Press, 1993), where the authors, referring to models with a stationary dependent variable and non-stationary independent variables as unbalanced regressions, write: "The mere fact that a regression is unbalanced may not be a matter of concern; for example, ADF statistics are computed from models that, in this terminology, are unbalanced. They are nonetheless valid tools for inference as long as the correct critical values are used." See p. 166. In order to ensure that our findings are robust, we also estimated a model where transport costs were only included in first difference. The results of those estimations are in line with those where transport costs are in levels.

of the Porcine Epidemic Diarrhea virus (PEDv). As explained in section 5.2.1.2, we include these variables to account for the possibility that arbitrage takes time and that there may be changes in economic conditions that are reflected in the price basis. We introduce these control variables in first difference primarily to capture the fact that the change in such variables (e.g. proxies for recession) is the shock that is the relevant potential impact on price basis, rather than the level of such variables. Furthermore, first differences help us to overcome the problem of unit roots in the variables. We limit the set of control variables to those for which the parties have provided data sources and which have been discussed in the context of this arbitration.[471]

6.39. We run the regressions for all categories of livestock, namely feeder and fed cattle, feeder pigs, and slaughter hogs. The regressions for feeder animals are run by weight categories for feeder cattle (450lb, 550lb, 650lb, 750lb, and 850lb) as well as for feeder pigs (smaller than 7kg (10-12lb) and between 7kg and 23kg (40lb)). For each regression, we calculate the long-run impact of COOL on the price basis, which corresponds to the long-term impact of the COOL measures on export price[472]:

$$\Delta Pe = \frac{\gamma_1 + \gamma_2}{1 - \delta}$$

6.40. As the regressions for feeder cattle and pigs are estimated for different weight categories, we take the weighted average of the estimated impact of the COOL measure across the different weight categories according to the share of each weight category in total imports of feeder cattle and pigs, respectively.[473] We consider this approach to be mathematically sound and more accurately reflective of the price impact according to the specific import shares of traded livestock.[474]

6.3.2.2 Mexico's price basis specification

6.41. The dynamic model we rely upon to explain the price basis of feeder cattle for Mexico is specified as:

$$P_{MEX,t} - P_{US,t} = \alpha + \beta X_t + \gamma_1 COOL1 + \gamma_2 COOL2 + \delta\left(P_{MEX,t-1} - P_{US,t-1}\right) + e_t$$

where $P_{MEX,t}$ is the price of Mexican feeder cattle exported to the United States at time t, $P_{US,t}$ is the price of feeder cattle in the United States in month t, COOL1 is dummy for the original COOL measure (taking a value of 1 as of September 2008), COOL2 is dummy for the amended COOL measure (taking a value of 1 as of May 2013). X is the vector of control variables that in the case of Mexico includes monthly dummies for seasonality and proxies for drought events, transport costs, recession, feed costs, and competing imports. Just as for Canada, all control variables are in first differences.

6.42. We run the regressions for feeder cattle by weight category (550lb and 750lb) and calculate the long-run impact of the COOL measure on the price basis. Since the regressions for feeder

[471] See section 5.2.1.2 above.

[472] We note that long-run calculations represent full adjustment in both econometric estimations and elasticity-based simulations. In our econometric determination of the COOL impact, the full adjustment of the price basis to the introduction of the COOL measure takes place in the span of a few months. This is why we compute the long-run impact of the COOL measure on the price basis. By contrast, long-run elasticities generally refer to a much longer time-period. As discussed by the parties, this is generally a period of 10 years. This is why we will use short-run elasticities to estimate the quantity effects of the COOL measure. See parties' responses to Arbitrator question No. 41.

[473] Trade data to compute the weighted share is taken from the US International Trade Commission (https://dataweb.usitc.gov/). Note that no weighted average is computed for fed (slaughter) livestock as the price basis is not specified for different weight categories unlike feeder livestock.

[474] This approach is similar to Canada's use of trade weights in calculating the average effect of COOL on feeder pig prices according to the respective shares of trade for different sizes of feeder pigs (i.e. weanlings and larger feeder pigs).

cattle refer to two weight categories, we average the estimated impact of the COOL measure across categories in the same way as we do for Canada's feeder cattle (and feeder pig).[475]

6.3.2.3 Data for price basis estimation

6.43. As the parties have mentioned on various occasions during these proceedings, data availability is key in order to estimate econometrically the impact of the COOL measure on the price basis. Unless specified otherwise, the data used in the econometrics are taken from the various exhibits submitted by the parties.

6.3.2.3.1 Data used for Canada's estimation

6.44. In its methodology paper, Canada proposes to estimate the impact of COOL on the price basis expressed in Canadian dollars for all livestock, with the exception of feeder pigs for which prices are expressed in US dollars. For purposes of our calculations, we consistently express the Canadian price basis for all livestock in Canadian dollars.

6.45. We use weekly information when data are available. The United States argues that "the use of th[ese] data is inappropriate because of the significant 'noise' associated with using weekly data instead of monthly data".[476] However, we agree with Canada that "random noise in the dependent variable in a regression model tends to drive estimated coefficients towards zero, not make them seem larger and more significant".[477] Therefore, we do not believe that this argument undermines the use of weekly data, especially when considering that, to the extent that markets react relatively quickly to changes in economic conditions, using weekly information is preferable to the use of monthly information because it allows a more timely account of market changes. The latter option would decrease the explanatory power of econometric estimations. In addition, the use of weekly data is likely to reduce the risk of multicollinearity. However, as price data for Canadian feeder pigs are only available monthly, for feeder pigs we use monthly data for all control variables.

6.46. As proxies for our control variables, we use: (a) diesel price to control for transport costs; (b) monthly differences between US and Canadian unemployment rate to control for recession[478]; (c) a US recession dummy variable; (d) corn near-term future prices for feed costs; (e) the percentage of area subject to a moderate to severe drought in Texas to control for drought events; (f) 12-months lag of a 4-week moving average of PEDv cases to control for the spread of the PEDv disease; and (g) US imports from Mexico to control for competing imports.

6.47. Our choice as to which specific measure of each variable to use was partially dictated by the quality of the data. For example, we prefer data on diesel prices[479] to the PPI index submitted by Canada[480] (as a measure for transport costs) because the information on the PPI index is only available monthly while the information on diesel prices is available weekly. Canada transforms the PPI index into weekly data using a statistical procedure (Loess regression).[481] But it is our view that data obtained in this way are more likely to be subject to measurement errors than weekly information. We therefore use weekly data on diesel prices.[482] Regarding the economic recession, we opt for using a measure of unemployment to control the large changes in economic conditions during the recession starting in 2008. We also use the recession dummy submitted by the United States to further control for the economic recession that coincided with the introduction of the

[475] Trade data to compute the weighted share is taken from the US International Trade Commission: https://dataweb.usitc.gov/.
[476] United States' written submission, paras. 108-109.
[477] Canada's written submission, para. 53.
[478] Monthly data on the (seasonally adjusted) unemployment rate of individuals 16 years and over in the United States is taken from the US Bureau of Labor Statistics: http://data.bls.gov/timeseries/LNS14000000. The monthly data on the (seasonally adjusted) unemployment rate of individuals 15 years and over in Canada is taken from Statistics Canada: http://www5.statcan.gc.ca/.
[479] We note that the United States submitted monthly data for diesel price (Exhibit USA-61B).
[480] Weekly cattle data used for regressions with variables, (Exhibit CAN-68).
[481] S. Pouliot and D. Sumner, "Differential impacts of country of origin labelling: COOL econometric evidence from cattle markets", *Food Policy*, Vol. 49 (2014), (Exhibit USA-35), pp. 107-116.
[482] Weekly data are taken from the US Energy Information Administration: http://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm.

original COOL measure, and in order to avoid attribution of the impacts of the recession to the COOL measure.

6.48. The econometric analysis of Canadian feeder and fed cattle covers the period from September 2005 to mid-January 2015, while that for feeder pigs and fed hogs covers the period from December 2003 to mid-January 2015. This reflects the lack of price information for the period before 2005 for Canadian cattle during the BSE crisis.

6.3.2.3.2 Data used for Mexico's estimation

6.49. Mexico's estimate of the impact of COOL on the price basis relies on monthly price data. However, weekly data are also available. As we explained above, we generally prefer to use weekly data when they are available because they better allow one to account for timely reactions to economic changes. For this reason, and for the sake of consistency with Canada's estimations, we use weekly data throughout to estimate the impact of the COOL measure on Mexico's price basis.[483]

6.50. *Mutatis mutandis*, we use the same data for Mexico that we use for Canada. Thus, we use US imports from Canada to control for competing imports.

6.3.2.4 Econometric results for price basis

6.51. Once the database with the relevant variables has been constructed, the model can be estimated econometrically. Both Canada and Mexico apply the same econometric estimator: the ordinary least squares (OLS) estimator. OLS estimates the parameters of the explanatory variables that best fit the data by minimizing the mean of the squared residuals. A residual is defined as the difference between an observed value of the dependent variable and the estimated value of the dependent variable (fitted value) provided by the estimated parameters of the explanatory variables. We report below the results of our econometric estimations of the effect of the COOL measure on the price basis and, therefore, on prices.

6.3.2.4.1 Canada's econometric estimation results

6.52. Table 1 displays the estimated long-term effects of the COOL measures on Canadian price basis for the various categories of feeder cattle, fed cattle, feeder pigs, and fed hogs.

Table 1: Canada's price basis econometric results

	Long-term impact of the COOL measure on price basis	P-value[484]
450 lb feeder cattle	-0.361	0.000
550 lb feeder cattle	-0.340	0.000
650 lb feeder cattle	-0.188	0.000
750 lb feeder cattle	-0.150	0.000
850 lb feeder cattle	-0.107	0.000
Feeder cattle (weighted average)[485]	**-0.260**	**-**

[483] In its methodology paper, Mexico computes a monthly average price for 350lb and 550lb feeder cattle using weekly price data. Mexico's methodology paper, Pouliot Study, pp. 9-10. We use these weekly data in our analysis.

[484] The p-value evaluates how well the sample data support the null hypothesis that the long-run impact of the COOL measure on the price basis is equal to zero. A small p-value (typically ≤ 0.05 or 0.10) indicates strong evidence against the null hypothesis, i.e. that the long-run impact of the COOL measure on the price is statistically different from zero. Conversely, a large p-value (> 0.05 or 0.10) indicates weak evidence against the null hypothesis which cannot be rejected, i.e. that the long-run impact of the COOL measure on the price is statistically not different from zero. Greene, W.H. *Econometric Analysis*, 4th edn (Prentice Hall, 2000).

[485] The following import share weights, based on 2014 trade data, have been used: 41 per cent for feeder cattle weighing 90kg or more but less than 200kg (198lb – 441lb) and 59 per cent for feeder cattle weighing 200kg or more but less than 320kg (441lb – 705lb).

	Long-term impact of the COOL measure on price basis	P-value[484]
Fed cattle	**-0.084**	**0.002**
10-12 lb feeder pigs	-5.875	0.042
40 lb feeder pigs	-23.1563	0.015
Feeder pigs (weighted average)[486]	**-9.158**	**-**
Fed hogs	**-0.079**	**0.000**

6.53. The detailed results of these regressions are reported in Annex C. The results are robust to alternative specifications and proxies, including those proposed by the United States and Canada. As reflected in Annex C, some regressions for feeder cattle yield statistically non-significant coefficients for the original COOL measure.[487] We note that the overall COOL impact on the price basis is negative and statistically significant for all weight categories. This impact encompasses both the original and amended COOL measures, the cumulative impact of which is the variable of interest.

6.3.2.4.2 Mexico's econometric results

6.54. Table 2 reports the estimated long-term effects of the COOL measures on Mexican price basis for the various weight categories of feeder cattle.

Table 2: Mexico's price basis econometric results

	Long-term impact of COOL measure on the price basis	P-value
350 lb feeder cattle	-0.154	0.000
550 lb feeder cattle	-0.098	0.000
Feeder cattle (weighted average) [488]	**-0.121**	**-**

6.55. The detailed results of our estimations for Mexico are reported in Annex C. The results are robust to alternative specifications and proxies, including those proposed by the United States and Mexico.

6.3.3 Elasticity-based simulation of the change in export quantities

6.56. Having estimated the impact of the COOL measure on the price basis, and thus on the export price (i.e. ΔP), we can move to the second step which consists of simulating the corresponding impact of the COOL measure on export volumes using the elasticity of export supply. The elasticity of export supply measures how the quantity of exports responds to changes in the export price. In mathematical terms, the export supply elasticity represents the slope of the

[486] The following import share weights, based on 2014 trade data, have been used: 81.2 per cent for feeder pigs weighing less than 7kg (15lb) and 18.8 per cent for feeder pigs weighing between 7kg and 23kg (15lb – 71lb).

[487] We note that Canada provided a rationale, unrebutted by the United States, as to why the original COOL measure resulted in "muted" price effects until the adoption of the amended COOL measure. Canada explains in respect of its own calculations that:

> In the case of the price difference regression for feeder cattle, the problematic issue was that around the time of the original COOL measure, U.S. cattle feeding operations responded primarily by cutting back dramatically in offering to buy Canadian feeder cattle. There was much uncertainty about the implementation and that meant many feeder cattle that would have been exported but for the original COOL measure remained in Canada. Since there was capacity in Canada to feed these cattle, the result was that the price did not fall and, given other price trends in the data at the time, the model estimates a positive coefficient rather than a coefficient of zero or slightly negative. By 2013, the market had adjusted to the original COOL measure. (Canada's methodology paper, Sumner Study, paras. 129-130.)

[488] The following import share weights, based on 2014 trade data, have been used: 40.7 per cent for feeder cattle weighing 90kg or more but less than 200kg (198lb – 441lb) and 59.3 per cent for feeder cattle weighing 200kg or more but less than 320kg (441lb – 705lb).

supply curve and is defined as the ratio between the percentage change in export quantity and the percentage change in export price.

6.57. As explained in greater detail in section 5.2.2.2[489], the impact of the COOL measure on export quantity (ΔQ) can be estimated as the product of (i) Canada/Mexico's export supply elasticity (ε_e); (ii) Canada/Mexico's export quantity in the baseline period (Q_c); (iii) the change in Canada/Mexico's export price caused by the COOL measure, as estimated econometrically (ΔP); and (iv) the inverse of Canada/Mexico's export price in the baseline period ($1/P_c$):

$$\Delta Q = \varepsilon_e \times Q_c \times \frac{\Delta P}{P_c}$$

6.3.3.1 Export supply elasticity

6.58. The only information missing at this stage is the value of Canada/Mexico's export supply elasticity. As noted by all parties, export supply elasticity can be expressed as a function of three variables: (i) supply elasticity in the domestic market of livestock (ε_s); (ii) demand elasticity in the domestic market of livestock (η); and (iii) the export share of livestock in the domestic supply (ω):

$$\varepsilon_e = \frac{\varepsilon_s}{\omega} \times \frac{1-\omega}{\omega} \times \eta$$

6.59. The level of the export supply elasticity can therefore be derived with relevant information on Canada's and Mexico's (i) export shares in their respective domestic livestock markets and (ii) own price elasticities for livestock supply and demand. These parameters are discussed in greater detail below.

6.3.3.2 Export shares of livestock

6.60. A key parameter required to compute the export supply elasticity is the export share of total domestic supply. Calculating the export share therefore requires information on the export volume in the numerator and the total supply/production in the denominator. We note that computing this share is not straightforward because it requires comparing, in theory, the export and supply of homogeneous categories of livestock. For example, the export share of fed cattle should correspond to the ratio between fed cattle exported for meat production and the supply of fed cattle for meat production. However, trade data do not completely distinguish between fed livestock exported for meat production and those exported for breeding purposes.[490] Similarly, data on the annual supply of livestock do not distinguish between fed and feeder livestock destined for meat production (as opposed to breeding or other purposes).

6.61. Each of the parties developed their own approaches to estimate the total supply of a given type of livestock (fed/feeder), some of which lead to different results. As discussed in section 5.2.2.2, Mexico derives the total supply of feeder cattle as the annual beef calf crop using a number of assumptions, including that only a certain percentage of annual calf production is eligible for export.[491] Under these assumptions, Mexico concludes that the export share of feeder cattle is 75 per cent. Mexico further explains that altering these assumptions results in export supply elasticities for feeder cattle ranging between 2.82 and 14.77.[492] Alternatively, Mexico also considers the total cattle population as a measure of Mexico's livestock supply, which results in an export share of 4.4 per cent.[493] The difference between an export share of 75 per cent and 4.4 per cent results from how Mexico defines total supply in the two cases. In the former case total supply is only the estimated supply of the breed that is "generally" exported, whereas in the latter case it is the total supply of cattle (this includes cattle of different breeds, beef cattle, dairy cattle, and new-born calves as well as cattle born in previous years).

[489] See Mexico's methodology paper, Pouliot Study, p. 17, equation (5).
[490] Canada's response to Arbitrator question No. 31, para. 87; Canada's comment on United States' response to Arbitrator question No. 46, para. 98.
[491] Mexico's methodology paper, Pouliot Study, pp. 18-21.
[492] Mexico's response to Arbitrator question No. 18, paras. 56-60.
[493] Mexico's response to Arbitrator question No. 31, paras. 87-88.

6.62. Canada approximates the total production of fed cattle/hogs in Canada as the sum of Canadian slaughter cattle/hogs and exports of feeder and fed cattle/pigs and hogs.[494] Canada further assumes that the total production of feeder cattle/pigs is equal to the total production of fed cattle/hogs under the assumption that the numbers of cattle/hogs slaughtered are roughly steady over time.[495] The United States proposes two different measures of total production of livestock, namely (a) calf/pig crop production and (b) the sum of livestock slaughter and exports of feeder or fed livestock, which yield different estimates of the export share.[496]

6.63. At the outset, we note the difficulty in estimating the total supply of a given type of livestock without making a number of assumptions. Ideally, one would want to include calf/pig crop production (new born livestock) that are eligible for export and livestock born in previous years that have become eligible to be exported in the current year. However, available data do not allow us to have a precise figure for total supply defined in this manner. We understand that the parties, in deriving export shares for the purpose of export supply elasticities have approximated total supply alternatively as: (a) the total population of livestock; (b) the share of the livestock population that is eligible for export; (c) total new born livestock in a year; or (d) total livestock demand (i.e. total slaughtered plus exported feeder and fed livestock). We also note that the parties have not challenged as erroneous any particular way of calculating export shares.[497] We also stress the importance of ensuring that the numerator and the denominator of the export share are as consistent and homogenous as possible. In light of the foregoing uncertainties, we decide to calculate export supply elasticities as an average across the several export supply elasticities that can be derived using the various proposed export shares (as set out in Annex C).

6.3.3.3 Domestic supply and demand elasticities for livestock

6.64. The remaining parameters necessary to compute the export supply elasticity are estimates of domestic supply and demand elasticities for livestock. While elasticities are usually estimated econometrically, all parties suggest, because of data constraints, the use of supply and demand elasticity estimates published in peer-reviewed academic literature.[498] We follow this approach and explain below what sources and which supply and demand elasticities for livestock we use to estimate the various export supply elasticities.

6.3.3.3.1 Short-run elasticities

6.65. As explained above, we decide to use short-run export supply elasticities on the basis of the relevant counterfactual. As a result, only short-run domestic supply and demand elasticities are relevant to compute the short-run export supply elasticities. We therefore reject all the long-run export supply elasticities values proposed by Canada and Mexico on the grounds that these elasticities were computed using long-run US supply and demand elasticities.[499] We also reject the short-run elasticity for Mexican feeder cattle computed by the United States due to an error made by the United States in computing the value for Mexico's short-run export supply elasticity for feeder cattle, by mixing the short-run supply elasticity for US feeder cattle with a long-run supply elasticity for US feeder cattle.[500]

6.3.3.3.2 Data availability and proxies

6.66. All parties note that supply and demand elasticity estimates for Canadian/Mexican livestock are not available. As a solution, all parties propose to use US supply and demand elasticity estimates as proxies. Canada explains that the estimates of the United States' domestic supply

[494] Canada's response to Arbitrator question No. 31, paras. 92 and 95.
[495] Canada's response to question No. 31, paras. 87, 90, 92, and 95.
[496] United States' response to Arbitrator question No. 31; Market Share Data, (Exhibit USA-51); United States' response to Arbitrator question No. 47.
[497] Although the parties do not contest the definition of the export share, Canada and the United States discussed which type of data to use for its calculation. See Canada's comments on the United States' response to Arbitrator question No. 46, para. 98; United States' comments on Canada's response to Arbitrator question No. 46, para. 77.
[498] United States' written submission, para. 44; Mexico's methodology paper, Pouliot Study, p. 18.
[499] Canada's response to Arbitrator question No. 46, para. 223; Mexico's methodology paper, Pouliot Study, pp. 19-21.
[500] United States' response to Arbitrator question No. 18, para. 74 and footnote 99.

and demand elasticities can be used for Canada because production and market conditions are similar.[501] Similarly, Mexico argues that the estimates of US demand and supply elasticities are reliable values of Mexican feeder cattle elasticities.[502] Although it would have been preferable to use direct estimates for Canada's and Mexico's demand and supply elasticities, we agree with the parties that using US elasticities is justified by the level of integration of the North American livestock market.

6.67. All parties refer to Tonsor et al. (2015) which reports short-run and long-run US supply and demand elasticity values for feeder and fed cattle, and for fed hogs published in and/or vetted by peer-reviewed academic literature.[503] Mexico refers also to the US demand elasticity for feeder cattle estimated in Marsh (2003)[504] which is consistent with the long-run elasticity listed in Tonsor et al. (2015). Additional supply and demand elasticity values have been proposed by Canada and the United States.[505]

6.68. Canada considers the demand elasticity of Canadian fed cattle to be equal to the US demand elasticity for wholesale beef imports reported in Tonsor et al. (2015). Canada also uses the US demand elasticity for fed cattle listed in Tonsor et al. (2015) as the demand elasticity for Canadian feeder cattle.[506] The United States contests the use of these values on the grounds that Canada mismatched these estimates reported in Tonsor et al. (2015).[507] We note that Canada did not provide any explanations as to why the demand elasticity of Canadian feeder and fed cattle could be respectively replaced by the US demand elasticity for fed cattle and for wholesale beef imports. We therefore reject the use of these demand elasticities proposed by Canada.

6.69. With respect to feeder cattle, the United States also refers to the short-run supply and demand elasticities for Canadian feeder cattle reported in Hamilton (1991).[508] Canada criticizes the use of the elasticity estimates reported in Hamilton (1991) on various grounds, including the fact that Hamilton (1991) is an unpublished thesis that reports these elasticity parameters from another unpublished report, and the United States did not correctly report the estimates, which

[501] Canada's response to Arbitrator question No. 46, para. 222.

[502] Mexico's methodology paper, Pouliot Study, p. 19.

[503] G. Tonsor, T. Schroder, and J. Parcell, "Economic Impacts of 2009 and 2013 U.S. Country-of-Origin Labeling Rules on U.S. Beef and Pork Markets", Project Number AG-3142-P-14-0054 R0, Final Report submitted to the USDA Office of the Chief Economist, (26 January 2015) (Exhibit MEX-2, Appendix A to Appendix 15).

[504] J. M. Marsh, "Impacts of Declining U.S. Retail Beef Demand on Farm-Level Beef Prices and Production", *American Journal of Agricultural Economics*, Vol. 85 (November 2003), (Exhibit MEX-2, Appendix 8), pp. 902-913.

[505] In addition to reporting US supply and demand elasticity estimates, the United States provided a list of alternative export supply elasticity estimates for Canadian feeder pigs taken from Wohlgenant, "Market Modeling of the Effects of Adoption of New Swine Waste Management Technologies in North Carolina" (July 2005), (Exhibit USA-30) (hereinafter "Wohlgenant (2005)"); for Canadian fed hogs taken from a study by the USDA Grain Inspection, Packer and Stockyards Administration (GIPSA) (taken from Exhibit USA-75 and hereinafter "USDA GIPSA Meat Marketing Study (2007)"), and from the National Pork Board, "An Economic Analysis of the Effectiveness of the Pork Checkoff Program", Final Report (February 2007), (Exhibit USA-76); and for Canadian fed cattle taken from Brester et al., "Evaluating the Impacts of the U.S. Department of Commerce's Preliminary Imposition of Tariffs on U.S. Imports of Canadian Live Cattle", Research Discussion Paper No. 34 (August 1999), (Exhibit USA-59) (hereinafter "Brester et al. (1999)"). See United States' response to Arbitrator question No. 46, para. 86.

Canada raises a number of issues regarding these export supply elasticities, including the fact that these elasticities have been computed using dated export shares. See Canada's comments on United States' response to Arbitrator question No. 46, paras 92-93. We agree with Canada and discard the export supply elasticities listed above on the grounds that: (i) the export shares used are out-of-date in the case of Wohlgenant (2005), (ii) the assumption used in GIPSA that import supply is twice as elastic as domestic supply has not been substantiated, and (iii) the estimate of the excess supply of Canadian hogs to the United States econometrically derived in National Pork Board (2007) is based on a parameter that is not statistically significant.

[506] Note that Canada reports only the long-run US demand elasticities. Canada's response to Arbitrator question No. 46, para. 223.

[507] United States comments on Canada's and Mexico's responses to Arbitrator question No. 46, para. 78.

[508] United States' response to Arbitrator question No. 46; S.A. Hamilton, "The location of the North American cattle-feeding industry: a nonspatial modelling approach", *Iowa State University Retrospective Theses and Dissertations* (1991), (Exhibit USA-80) (hereinafter "Hamilton (1991)").

are not based on Canada but on various regions in the United States.[509] We note that the United States did not provide any explanation as to why these elasticity estimates would be more relevant or accurate than the elasticities reported in Tonsor et al. (2015), nor what criteria the United States considered to select the elasticities reported in Hamilton (1991).[510] For this reason, we discard these estimates proposed by the United States for the purpose of our calculation.

6.70. With respect to feeder pigs, the United States points to Wohlgenant (2005), which provides a short-run supply elasticity value for US feeder pigs. Although Tonsor et al. (2015) does not report any supply and demand elasticity estimates for US feeder pigs, it reports the demand elasticity of US fed hogs taken from Wohlgenant (2005). Wohlgenant (2005) also reports the short-run elasticities of supply and demand for Canadian fed hogs published in Moschini and Meilke (1992).[511] Canada argues that the elasticities values for Canadian fed hogs taken from Moschini and Meike (1992) are extremely small and based on data from well before 1992 when the structure of the hog industry was different.[512] Instead, Canada proposes to set the supply and demand elasticities for feeder pigs as the product of the supply and demand elasticities for fed hogs and the ratio between the supply and demand elasticities for feeder and fed cattle.[513] The United States is of the view that there is no justification for Canada's adjustment of the feeder pigs supply and demand elasticities in order to "mimic" the relationship between fed and feeder cattle elasticities.

6.71. We note that Wohlgenant (2005) provides the most recent estimates of the supply elasticity for US feeder pigs and demand elasticity for fed hogs. We also note that the demand elasticity of feeder pigs is the only elasticity for which there is no direct estimate. Wohlgenant (2005) computes the demand elasticity of Canadian feeder pigs as the product of the demand elasticity for Canadian fed hogs taken from Moschini and Meike (1992), and an estimated elasticity of price transmission from the US feeder pigs market to the US fed hogs market. We discard the estimate of the demand elasticity for Canadian feeder pigs derived in Wohlgenant (2005) because it is not a direct econometric estimation of the Canadian demand elasticity for feeder pigs. At the same time, we concur with the United States regarding the fact that Canada did not provide any explanation as to why the relationship between fed hog and feeder pigs elasticities should "mimic" the fact that fed cattle elasticities are more elastic than feeder cattle elasticities. In fact, a comparison of the estimates of the US supply elasticity for feeder pigs and fed hogs points to a more elastic supply elasticity for feeder pigs than for fed hogs. We therefore reject the idea of "mimicking" the elasticities for feeder pigs using the relationship between feeder and fed cattle elasticities. Instead, we decide to use the US supply elasticity for feeder pigs provided in Wohlgenant (2005) and set, in the absence of a direct estimate, the demand elasticity for US feeder pigs as the product of the demand elasticity for US fed hogs and the elasticity of price transmission from the US feeder pigs market to the US fed hogs market estimated in Wohlgenant (2005).[514]

6.72. Table 3 summarizes the various supply and demand elasticities used in our own calculation of Canada's and Mexico's respective short-run export supply elasticities.

[509] Canada further argues that the United States did not correctly report the estimates, which are not based on Canada but on various regions in the United States. Canada also argues that these estimates are out-of-date. Canada's comments on United States' response to Arbitrator question No. 46, paras. 99-100.

[510] Hamilton (1991) reports two supply and demand elasticities for feeder cattle: one for Western Canada (based on US Northern Plain elasticities) and one for Eastern Canada (based on Northeast of the United States)

[511] United States' response to Arbitrator question No. 28, footnote 141.

[512] Canada's comments on United States' response to Arbitrator question No. 46, paras. 94-95.

[513] Canada's response to Arbitrator question No. 46, para. 223.

[514] The elasticity of price transmission from the US feeder pigs market to the US fed hogs market is equal to 0.62. See Wohlgenant (2005).

Table 3: Supply and demand elasticity definitions, estimates and sources

Type of elasticity	Short-run estimate	Source
US supply feeder cattle	0.22	Tonsor et al. (2015); Pendell et al. (2010)[515]; Marsh (2003)
US demand feeder cattle	-0.14	Tonsor et al. (2015); Pendell et al. (2010); USDA GIPSA Meat Marketing Study (2007)
US supply fed cattle	0.26	Tonsor et al. (2015); Pendell et al. (2010); Marsh (1994)
US demand fed cattle	-0.40	Tonsor et al. (2015); Pendell et al. (2010); USDA GIPSA Meat Marketing Study (2007)
US supply feeder pigs	0.64	Wohlgenant (2005)
US demand feeder pigs	-0.32	Arbitrator's own calculation based on Wohlgenant (2005)
US supply fed hogs	0.41	Tonsor et al. (2015); Pendell et al. (2010); Lemieux and Wohlgenant (1989)[516]
US demand fed hogs	-0.51	Tonsor et al. (2015); Pendell et al. (2010); Wohlgenant (2005)

6.3.3.4 Derived export supply elasticity estimates

6.73. Based on our decisions above, Table 4 reports Mexico's short-run export supply elasticity for feeder cattle and Canada's short-run export supply elasticities for feeder and fed cattle, feeder pigs and fed hogs (the detailed calculations are provided in Annex C).

Table 4: Mexico's and Canada's export supply elasticities computation

Parameters	Mexico's feeder cattle	Canada's feeder cattle	Canada's fed cattle	Canada's feeder pigs	Canada's fed hogs
Export supply elasticity[517]	2.51	2.18	4.93	5.32	23.31

6.3.3.5 Export quantity simulation results

6.74. With the estimates of the different export supply elasticities and the econometric estimates of the effects of the COOL measure on the price basis, we can proceed to the actual simulation of the change in export quantities caused by the COOL measure.

6.3.3.5.1 Canada's export quantity simulation results

6.75. Table 5 reports the computation and results of Canada's export quantity simulation for feeder and fed cattle, feeder pigs and fed hogs.

[515] D. Pendell et al., "AJAE Appendix: Animal Identification and Tracing in the United States", *American Journal of Agricultural Economics*, Vol. 92 (5 March 2010), (Exhibit MEX-2, Appendix 12), pp. 927-940.

[516] C. Lemieux and M. Wohlgenant, "'Ex Ante' Evaluation of the Economic Impact of Agricultural Biotechnology: The Case of Porcine Somatotropin", *American Journal of Agricultural Economics*, Vol. 71(4) (1989), (Exhibit CAN-85), pp. 903-914.

[517] The export supply elasticity is computed as $[(\varepsilon_s - \eta\ (\ 1- \omega)]/\ \omega$, where ε_s is the supply elasticity in the domestic market of livestock, η is the demand elasticity in the domestic market of livestock, and ω is the export share of livestock in the domestic production.

Table 5: Canada's export quantity results [518]

	Impact of the COOL measure on price	Export supply elasticity	2014 baseline export price (CAD/head or CAD/lb)	2014 baseline export quantity (head)	Change in export quantity (lb or head)
Feeder cattle	-0.260	2.18	2.05	442,908	**-84,293,112**
Fed cattle	-0.084	4.93	1.55	386,902	**-142,724,960**
Feeder pigs	-9.158	5.32	63.00	3,893,860	**-3,009,397**
Fed hogs	-0.079	23.31	0.81	420,713	**-270,450,240**

6.3.3.5.2 Mexico's export quantity simulation results

6.76. Table 6 reports the computation and results of Mexico's export quantity simulation for feeder cattle.

Table 6: Mexico's export quantity results

	Impact of the COOL measure on price	Export supply elasticity	2014 baseline export price (USD/lb)	2014 baseline export quantity (head)	Change in export quantity (lb)
Feeder cattle	-0.121	2.52	2.42	1,108,009	**-65,021,917**

6.3.4 Export revenue loss results

6.77. Having estimated econometrically the impact of the COOL measure on the price basis (ΔP) and simulated the corresponding change in export quantity (ΔQ), the computation of the export revenue loss is straightforward.

6.3.4.1 Canada's export revenue losses

6.78. Table 7 displays the computation and results of Canada's export revenue losses for feeder and fed cattle, feeder pigs, and fed hogs.

Table 7: Canada's export revenue losses [519]

	Impact of the COOL measure on price	Change in export quantity (lb or head)	2014 baseline export price (CAD/head or CAD/lb)	2014 baseline export quantity (head)	Export revenue loss (million CAD)
Feeder cattle	-0.260	-84,293,112	2.05	442,908	-274.067
Fed cattle	-0.084	-142,724,960	1.55	386,902	-278.031
Feeder pigs	-9.158	-3,009,397	63.00	3,893,860	-252.815
Fed hogs	-0.079	-270,450,240	0.81	420,713	-249.816
Total					**-1,054.729**

[518] All export prices are expressed as Canadian dollars per pound, except for feeder pigs whose price is expressed as Canadian dollars per head. All changes in export quantity are expressed in pounds, except for feeder pigs whose change in export quantity is expressed in heads.

[519] All export prices are expressed as Canadian dollars per pound, except for feeder pigs whose price is expressed as Canadian dollars per head. All changes in export quantity are expressed in pounds, except for feeder pigs whose change in export quantity is expressed in heads.

6.3.4.2 Mexico's export revenue losses

6.79. Table 8 reports the computation and results of Mexico's export revenue losses for feeder cattle.

Table 8: Mexico's export revenue losses

	Impact of the COOL measure on price	Change in export quantity (lb)	2014 baseline export price (USD/lb)	2014 baseline export quantity (head)	Export revenue loss (million USD)
Feeder cattle	-0.121	-65,021,917	1.86	442,908	-227.758

6.3.4.3 Overall export revenue losses

6.80. We note that Canada and Mexico have proposed their levels of suspension in different currencies. We compute overall export revenue losses in the currencies requested by Canada (CAD) and Mexico (USD) to arrive at the levels of suspension the levels of suspension that can be authorized by the DSB.

6.81. Based on our calculation, the level of nullification or impairment for Canada amounts to CAD 1,054.729 million annually.

6.82. Based on our calculation, the level of nullification or impairment for Mexico amounts to USD 227.758 million annually.

7 CONCLUSION AND DECISION IN RESPECT OF CANADA (DS384)

7.1. For the reasons set out above, the Arbitrator determines that the annual level of nullification or impairment of benefits accruing to Canada as a result of the COOL measure is CAD 1,054.729 million. Therefore, in accordance with Article 22.4 of the DSU, Canada may request authorization from the DSB to suspend concessions and related obligations in the goods sector under the GATT 1994 at a level not exceeding CAD 1,054.729 million annually.

7 CONCLUSION AND DECISION IN RESPECT OF MEXICO (DS386)

7.1. For the reasons set out above, the Arbitrator determines that the annual level of nullification or impairment of benefits accruing to Mexico as a result of the COOL measure is USD 227.758 million. Therefore, in accordance with Article 22.4 of the DSU, Mexico may request authorization from the DSB to suspend concessions and related obligations in the goods sector under the GATT 1994 at a level not exceeding USD 227.758 million annually.

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WORLD TRADE ORGANIZATION

WT/DS384/ARB/Add.1
WT/DS386/ARB/Add.1

7 December 2015

(15-6444)

Original: English

UNITED STATES – CERTAIN COUNTRY OF ORIGIN LABELLING (COOL) REQUIREMENTS

RECOURSE TO ARTICLE 22.6 OF THE DSU BY THE UNITED STATES

DECISIONS BY THE ARBITRATOR

Addendum

This *addendum* contains Annexes A to C to the Decisions by the Arbitrator to be found in documents WT/DS384/ARB, and WT/DS386/ARB.

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WORKING PROCEDURES OF THE ARBITRATOR

ANNEX A-1

WORKING PROCEDURES OF THE ARBITRATOR (WT/DS384)

6 July 2015

1. In its proceedings, the Arbitrator shall follow the relevant provisions of the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU). In addition, the following Working Procedures shall apply.

General

2. The deliberations of the Arbitrator and the documents submitted to it shall be kept confidential. Nothing in the DSU or in these Working Procedures shall preclude a party to the dispute (hereafter "party") from disclosing statements of its own positions to the public. The Arbitrator may adopt special procedures concerning Business Confidential Information after consulting the parties.

3. The Arbitrator shall conduct its internal deliberations in closed session. The parties shall be present at meetings only when invited by the Arbitrator to appear before it. The Arbitrator may open its meetings with the parties to the public, subject to appropriate procedures to be adopted by the Arbitrator after consulting the parties.

4. Each party has the right to determine the composition of its own delegation when meeting with the Arbitrator. Each party shall have responsibility for all members of its own delegation and shall ensure that each member of such delegation acts in accordance with the DSU and these Working Procedures, particularly with regard to the confidentiality of the proceedings.

5. For the purposes of joining these proceedings with those in the parallel dispute DS386, Mexico will be included in all communications of the Arbitrator and of the parties, including their submissions. Mexico will also be allowed to be present throughout the joint substantive meeting in DS384 and DS386.

Submissions

6. Canada shall transmit to the Arbitrator and to the United States a communication explaining the basis for its request, including the methodology and data supporting it, in accordance with the timetable adopted by the Arbitrator.

7. Each party to the dispute shall also transmit to the Arbitrator a written submission in which it presents the facts of the case and its arguments, in accordance with the timetable adopted by the Arbitrator.

8. A party shall submit any request for a preliminary ruling at the earliest possible opportunity and in any event no later than in its written submission to the Arbitrator. If the United States requests such a ruling in its written submission to the Arbitrator, Canada shall submit its response to the request in its written submission. If Canada requests such a ruling in its written submission to the Arbitrator, the United States shall submit its response to the request prior to the substantive meeting, at a time to be determined by the Arbitrator in light of the request. Exceptions to this procedure shall be granted upon a showing of good cause.

9. Each party shall submit all factual evidence to the Arbitrator no later than in its written submission, except with respect to evidence necessary for purposes of rebuttal, answers to questions or comments on answers provided by the other party. Exceptions to this procedure shall be granted upon a showing of good cause. Where such exception has been granted, the Arbitrator shall accord the other party a period of time for comment, as appropriate, on any new factual evidence submitted after the substantive meeting.

10. Where the original language of exhibits is not a WTO working language, the submitting party shall submit a translation into the WTO working language of the submission at the same time. The Arbitrator may grant reasonable extensions of time for the translation of such exhibits upon a showing of good cause. Any objection as to the accuracy of a translation should be raised promptly in writing, no later than the next filing or meeting (whichever occurs earlier) following the submission which contains the translation in question. The Arbitrator may grant reasonable extensions of time for the filing of such objection upon a showing of good cause. Any objection shall be accompanied by a detailed explanation of the grounds of objection and an alternative translation.

11. In order to facilitate the work of the Arbitrator, each party is invited to make its submissions
..... in accordance with the WTO Editorial Guide for Submissions attached as Annex 1, as relevant and to the extent that it is practical to do so.

12. To facilitate the maintenance of the record of the dispute and maximize the clarity of submissions, each party shall sequentially number its exhibits throughout the course of the proceedings. For example, exhibits submitted by the United States could be numbered US-1, US-2, etc. If the last exhibit in connection with the first submission was numbered US-5, the first exhibit of the next submission thus would be numbered US-6.

Questions

13. The Arbitrator may at any time pose questions to the parties, orally or in writing, including prior to the substantive meeting.

Substantive meeting

14. Each party shall provide to the Arbitrator the list of members of its delegation in advance of each meeting with the Arbitrator and no later than 5.00 p.m. the previous working day.

15. The substantive meeting of the Arbitrator with the parties shall be conducted as follows:

a. The Arbitrator shall invite the United States to make an opening statement to present its case first. Subsequently, the Arbitrator shall invite Canada to present its point of view. Before each party takes the floor, it shall provide the Arbitrator and other participants at the meeting with a provisional written version of its statement. In the event that interpretation is needed, each party shall provide additional copies for the interpreters, through the Arbitrator's Secretary. Each party shall make available to the Arbitrator and the other party the final version of its statement, preferably at the end of the meeting, and in any event no later than 5.00 p.m. on the first working day following the meeting.

b. After the conclusion of the statements, the Arbitrator shall give each party the opportunity to ask each other questions or make comments, through the Arbitrator. Each party shall then have an opportunity to answer these questions orally. Each party shall send in writing, within a timeframe to be determined by the Arbitrator, any questions to the other party to which it wishes to receive a response in writing. Each party shall be invited to respond in writing to the other party's written questions within a deadline to be determined by the Arbitrator.

c. The Arbitrator may subsequently pose questions to the parties. Each party shall then have an opportunity to answer these questions orally. The Arbitrator shall send in writing, within a timeframe to be determined by it, any questions to the parties to which it wishes to receive a response in writing. Each party shall be invited to respond in writing to such questions within a deadline to be determined by the Arbitrator.

d. Once the questioning has concluded, the Arbitrator shall afford each party an opportunity to present a brief closing statement, with the United States presenting its statement first.

Executive summaries

16. The description of the arguments of the parties in the Decision of the Arbitrator shall consist of executive summaries provided by the parties, which shall be annexed as addenda to the decision. These executive summaries shall not in any way serve as a substitute for the submissions of the parties in the Arbitrator's examination of the case.

17. Each party shall submit an executive summary of the facts and arguments as presented to the Arbitrator in its written submissions and oral statements, in accordance with the timetable adopted by the Arbitrator. Each such executive summary shall not exceed 15 pages. The Arbitrator will not summarize in a descriptive part, or annex to its decision, the parties' responses to questions.

Service of documents

18. The following procedures regarding service of documents shall apply:

a. Each party shall submit all documents to the Arbitrator by filing them with the DS Registry (office No. 2047).

b. Each party shall file three (3) paper copies of all documents it submits to the Arbitrator. However, when exhibits are provided on CD-ROMS/DVDs, three (3) CD-ROMS/DVDs and two (2) paper copies of those exhibits shall be filed. The DS Registrar shall stamp the documents with the date and time of the filing. The paper version shall constitute the official version for the purposes of the record of the dispute.

c. Each party shall also provide an electronic copy of all documents it submits to the Arbitrator at the same time as the paper versions, preferably in Microsoft Word format, either on a CD-ROM, a DVD or as an e-mail attachment. If the electronic copy is provided by e-mail, it should be addressed to DSRegistry@wto.org, with a copy to ***.***@wto.org and ***.***@wto.org. If a CD-ROM or DVD is provided, it shall be filed with the DS Registry.

d. Each party shall serve any document submitted to the Arbitrator directly on the other party. Each party shall confirm, in writing, that copies have been served as required at the time it provides each document to the Arbitrator.

e. Each party shall file its documents with the DS Registry and serve copies on the other party by 5.00 p.m. (Geneva time) on the due dates established by the Arbitrator. A party may submit its documents to another party in electronic format only, subject to the recipient party's prior written approval and provided that the Arbitrator's Secretary is notified.

f. The Arbitrator shall provide the parties with an electronic version of its decision, as well as of other documents as appropriate. When the Arbitrator transmits to the parties both paper and electronic versions of a document, the paper version shall constitute the official version for the purposes of the record of the dispute.

Modification of Working Procedures

19. The Arbitrator reserves the right to modify these procedures as necessary, after consultation with the parties.

ANNEX A-2

WORKING PROCEDURES OF THE ARBITRATOR (WT/DS386)

6 July 2015

1. In its proceedings, the Arbitrator shall follow the relevant provisions of the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU). In addition, the following Working Procedures shall apply.

General

2. The deliberations of the Arbitrator and the documents submitted to it shall be kept confidential. Nothing in the DSU or in these Working Procedures shall preclude a party to the dispute (hereafter "party") from disclosing statements of its own positions to the public. The Arbitrator may adopt special procedures concerning Business Confidential Information after consulting the parties.

3. The Arbitrator shall conduct its internal deliberations in closed session. The parties shall be present at meetings only when invited by the Arbitrator to appear before it. The Arbitrator may open its meetings with the parties to the public, subject to appropriate procedures to be adopted by the Arbitrator after consulting the parties.

4. Each party has the right to determine the composition of its own delegation when meeting with the Arbitrator. Each party shall have responsibility for all members of its own delegation and shall ensure that each member of such delegation acts in accordance with the DSU and these Working Procedures, particularly with regard to the confidentiality of the proceedings.

5. For the purposes of joining these proceedings with those in the parallel dispute DS384, Canada will be included in all communications of the Arbitrator and of the parties, including their submissions. Canada will also be allowed to be present throughout the joint substantive meeting in DS384 and DS386.

Submissions

6. Mexico shall transmit to the Arbitrator and to the United States a communication explaining the basis for its request, including the methodology and data supporting it, in accordance with the timetable adopted by the Arbitrator.

7. Each party to the dispute shall also transmit to the Arbitrator a written submission in which it presents the facts of the case and its arguments, in accordance with the timetable adopted by the Arbitrator.

8. A party shall submit any request for a preliminary ruling at the earliest possible opportunity and in any event no later than in its written submission to the Arbitrator. If the United States requests such a ruling in its written submission to the Arbitrator, Mexico shall submit its response to the request in its written submission. If Mexico requests such a ruling in its written submission to the Arbitrator, the United States shall submit its response to the request prior to the substantive meeting, at a time to be determined by the Arbitrator in light of the request. Exceptions to this procedure shall be granted upon a showing of good cause.

9. Each party shall submit all factual evidence to the Arbitrator no later than in its written submission, except with respect to evidence necessary for purposes of rebuttal, answers to questions or comments on answers provided by the other party. Exceptions to this procedure shall be granted upon a showing of good cause. Where such exception has been granted, the Arbitrator shall accord the other party a period of time for comment, as appropriate, on any new factual evidence submitted after the substantive meeting.

10. Where the original language of exhibits is not a WTO working language, the submitting party shall submit a translation into the WTO working language of the submission at the same time. The Arbitrator may grant reasonable extensions of time for the translation of such exhibits upon a showing of good cause. Any objection as to the accuracy of a translation should be raised promptly in writing, no later than the next filing or meeting (whichever occurs earlier) following the submission which contains the translation in question. The Arbitrator may grant reasonable extensions of time for the filing of such objection upon a showing of good cause. Any objection shall be accompanied by a detailed explanation of the grounds of objection and an alternative translation.

11. In order to facilitate the work of the Arbitrator, each party is invited to make its submissions
..... in accordance with the WTO Editorial Guide for Submissions attached as Annex 1, as relevant and to the extent that it is practical to do so.

12. To facilitate the maintenance of the record of the dispute and maximize the clarity of submissions, each party shall sequentially number its exhibits throughout the course of the proceedings. For example, exhibits submitted by the United States could be numbered US-1, US-2, etc. If the last exhibit in connection with the first submission was numbered US-5, the first exhibit of the next submission thus would be numbered US-6.

Questions

13. The Arbitrator may at any time pose questions to the parties, orally or in writing, including prior to the substantive meeting.

Substantive meeting

14. Each party shall provide to the Arbitrator the list of members of its delegation in advance of each meeting with the Arbitrator and no later than 5.00 p.m. the previous working day.

15. The substantive meeting of the Arbitrator with the parties shall be conducted as follows:

a. The Arbitrator shall invite the United States to make an opening statement to present its case first. Subsequently, the Arbitrator shall invite Mexico to present its point of view. Before each party takes the floor, it shall provide the Arbitrator and other participants at the meeting with a provisional written version of its statement. In the event that interpretation is needed, each party shall provide additional copies for the interpreters, through the Arbitrator's Secretary. Each party shall make available to the Arbitrator and the other party the final version of its statement, preferably at the end of the meeting, and in any event no later than 5.00 p.m. on the first working day following the meeting.

b. After the conclusion of the statements, the Arbitrator shall give each party the opportunity to ask each other questions or make comments, through the Arbitrator. Each party shall then have an opportunity to answer these questions orally. Each party shall send in writing, within a timeframe to be determined by the Arbitrator, any questions to the other party to which it wishes to receive a response in writing. Each party shall be invited to respond in writing to the other party's written questions within a deadline to be determined by the Arbitrator.

c. The Arbitrator may subsequently pose questions to the parties. Each party shall then have an opportunity to answer these questions orally. The Arbitrator shall send in writing, within a timeframe to be determined by it, any questions to the parties to which it wishes to receive a response in writing. Each party shall be invited to respond in writing to such questions within a deadline to be determined by the Arbitrator.

d. Once the questioning has concluded, the Arbitrator shall afford each party an opportunity to present a brief closing statement, with the United States presenting its statement first.

Executive summaries

16. The description of the arguments of the parties in the Decision of the Arbitrator shall consist of executive summaries provided by the parties, which shall be annexed as addenda to the decision. These executive summaries shall not in any way serve as a substitute for the submissions of the parties in the Arbitrator's examination of the case.

17. Each party shall submit an executive summary of the facts and arguments as presented to the Arbitrator in its written submissions and oral statements, in accordance with the timetable adopted by the Arbitrator. Each such executive summary shall not exceed 15 pages. The Arbitrator will not summarize in a descriptive part, or annex to its decision, the parties' responses to questions.

Service of documents

18. The following procedures regarding service of documents shall apply:

a. Each party shall submit all documents to the Arbitrator by filing them with the DS Registry (office No. 2047).

b. Each party shall file three (3) paper copies of all documents it submits to the Arbitrator. However, when exhibits are provided on CD-ROMS/DVDs, three (3) CD-ROMS/DVDs and two (2) paper copies of those exhibits shall be filed. The DS Registrar shall stamp the documents with the date and time of the filing. The paper version shall constitute the official version for the purposes of the record of the dispute.

c. Each party shall also provide an electronic copy of all documents it submits to the Arbitrator at the same time as the paper versions, preferably in Microsoft Word format, either on a CD-ROM, a DVD or as an e-mail attachment. If the electronic copy is provided by e-mail, it should be addressed to DSRegistry@wto.org, with a copy to ***.***@wto.org and ***.***@wto.org. If a CD-ROM or DVD is provided, it shall be filed with the DS Registry.

d. Each party shall serve any document submitted to the Arbitrator directly on the other party. Each party shall confirm, in writing, that copies have been served as required at the time it provides each document to the Arbitrator.

e. Each party shall file its documents with the DS Registry and serve copies on the other party by 5.00 p.m. (Geneva time) on the due dates established by the Arbitrator. A party may submit its documents to another party in electronic format only, subject to the recipient party's prior written approval and provided that the Arbitrator's Secretary is notified.

f. The Arbitrator shall provide the parties with an electronic version of its decision, as well as of other documents as appropriate. When the Arbitrator transmits to the parties both paper and electronic versions of a document, the paper version shall constitute the official version for the purposes of the record of the dispute.

Modification of Working Procedures

19. The Arbitrator reserves the right to modify these procedures as necessary, after consultation with the parties.

ANNEX A-3

PROCEDURES FOR AN OPEN SUBSTANTIVE MEETING OF THE ARBITRATOR[1] (WT/DS384)

Adopted on 6 July 2015

1. The Arbitrator shall hold a joint substantive meeting in DS384 and DS386.

2. Subject to the availability of suitable WTO meeting rooms, the Arbitrator will start its substantive meeting, on 15-16 September 2015, with a session with the parties open to the public. At that session, each party will be asked to make an opening statement. After the parties have made their statements, they will be given the opportunity to pose questions to the other party or make comments on the other party's statement. The Arbitrator may pose any questions or make any comments during such session. The parties will also have an opportunity to make their closing statement during the session open to the public.

3. To the extent that the Arbitrator or any party considers it necessary, the Arbitrator will also hold a session with the parties not open to public observation during which the parties will be allowed to make additional statements or comments, and pose questions, that involve business confidential information. The Arbitrator may also pose questions during such a session.

4. The following persons will be admitted into the meeting room during all sessions of the Arbitrator's substantive meeting, whether open or closed to the public:

- the members of the Arbitrator;
- all members of the delegations of the parties to DS384 and DS386; and
- WTO Secretariat staff assisting the Arbitrator.

5. No person shall disclose any business confidential information at any session open to the public.

6. WTO Members and Observers and the public may observe the Arbitrator's sessions that are open to public viewing with observers in the gallery of the hearing room. The public viewing will be open to officials of WTO Members and Observers upon presentation of their official badges. Accredited journalists and representatives of relevant non-governmental organizations may indicate to the Secretariat their interest in attending the public viewing (Information and External Relations Division). Members of the general public will be invited to register their interest in attending the public viewing via the WTO website, by close of business on 4 September 2015.

[1] These procedures are adopted according to, and are an integral part of, the Arbitrator's Working Procedures of 6 July 2015.

ANNEX A-4

PROCEDURES FOR AN OPEN SUBSTANTIVE MEETING OF THE ARBITRATOR[2] (WT/DS386)

Adopted on 6 July 2015

1. The Arbitrator shall hold a joint substantive meeting in DS384 and DS386.

2. Subject to the availability of suitable WTO meeting rooms, the Arbitrator will start its substantive meeting, on 15-16 September 2015, with a session with the parties open to the public. At that session, each party will be asked to make an opening statement. After the parties have made their statements, they will be given the opportunity to pose questions to the other party or make comments on the other party's statement. The Arbitrator may pose any questions or make any comments during such session. The parties will also have an opportunity to make their closing statement during the session open to the public.

3. To the extent that the Arbitrator or any party considers it necessary, the Arbitrator will also hold a session with the parties not open to public observation during which the parties will be allowed to make additional statements or comments, and pose questions, that involve business confidential information. The Arbitrator may also pose questions during such a session.

4. The following persons will be admitted into the meeting room during all sessions of the Arbitrator's substantive meeting, whether open or closed to the public:

- the members of the Arbitrator;
- all members of the delegations of the parties to DS384 and DS386; and
- WTO Secretariat staff assisting the Arbitrator.

5. No person shall disclose any business confidential information at any session open to the public.

6. WTO Members and Observers and the public may observe the Arbitrator's sessions that are open to public viewing with observers in the gallery of the hearing room. The public viewing will be open to officials of WTO Members and Observers upon presentation of their official badges. Accredited journalists and representatives of relevant non-governmental organizations may indicate to the Secretariat their interest in attending the public viewing (Information and External Relations Division). Members of the general public will be invited to register their interest in attending the public viewing via the WTO website, by close of business on 4 September 2015.

[2] These procedures are adopted according to, and are an integral part of, the Arbitrator's Working Procedures of 6 July 2015.

ANNEX A-5

PROCEDURES OF THE ARBITRATOR CONCERNING BUSINESS CONFIDENTIAL INFORMATION[3] (WT/DS384)

Adopted on 6 July 2015

1. These procedures apply to any business confidential information (BCI) that a party submits to the Arbitrator. For the purposes of these procedures, and in line with paragraph 5 of the Arbitrator's Working Procedures, the term "party" in these procedures refers to the parties in DS384 and DS386.

2. For the purposes of these procedures, BCI is defined as any information that has been designated as such by the party submitting the information, that is not available in the public domain and the release of which could reasonably be considered to cause or threaten to cause harm to an interest of the person or entity that supplied the business information to the party.

3. No person may have access to BCI except a member of the Secretariat or the Arbitrator, a party's employee participating in the dispute, and a party's outside advisor for purposes of this dispute. However, an outside advisor is not permitted access to BCI if that advisor is an officer or employee of an enterprise engaged in the production, export, or import of cattle, swine, beef, or pork. When a party provides BCI to an outside advisor who is an employee or officer of an industry association of such enterprises, that party shall obtain written assurances from such advisor that he or she has read and understands these procedures and will not disclose any BCI in contravention of these procedures.

4. A party obtaining access to BCI as a result of the BCI being submitted in this dispute shall treat it as confidential, i.e. shall not disclose that information other than to those persons authorized to receive it pursuant to these procedures. Each party shall have responsibility in this regard for its employees as well as any outside advisors for the purposes of this dispute. BCI obtained under these procedures may be used only for the purpose of providing information and argumentation in this dispute.

5. A party submitting or referring to BCI in a document shall mark the cover and each page of the document to indicate the presence of BCI in the document as follows: BCI shall be placed between double brackets (for example, [[xx,xxx.xx]]). The cover and the top of each page of the document shall contain the notice "Contains Business Confidential Information". Any BCI that is submitted in electronic form shall be clearly marked with the phrase "Contains BCI" on a label on the storage medium, and clearly marked with the phrase "Contains BCI" in the electronic file name.

6. In the case of an oral statement containing BCI to be delivered in the session not open to public observation as foreseen in paragraph 3 of the "Procedures for an open substantive meeting of the Arbitrator," the Arbitrator should ensure that only persons authorized to have access to BCI pursuant to these procedures are permitted to hear the statement.

7. The parties and the Arbitrator shall store all documents containing BCI so as to prevent unauthorized access to such information.

8. The Arbitrator shall not disclose BCI, in its decision or in any other way, to persons not authorized under these procedures to have access to BCI. The Arbitrator may, however, make statements of conclusion drawn from such information. Before the Arbitrator makes its decision publicly available, the Arbitrator shall give each party an opportunity to ensure that the report does not contain any information that it has designated as BCI.

[3] These procedures are adopted according to, and are an integral part of, the Arbitrator's Working Procedures of 6 July 2015.

ANNEX A-6

PROCEDURES OF THE ARBITRATOR CONCERNING BUSINESS CONFIDENTIAL INFORMATION[4] (WT/DS386)

Adopted on 6 July 2015

1. These procedures apply to any business confidential information (BCI) that a party submits to the Arbitrator. For the purposes of these procedures, and in line with paragraph 5 of the Arbitrator's Working Procedures, the term "party" in these procedures refers to the parties in DS384 and DS386.

2. For the purposes of these procedures, BCI is defined as any information that has been designated as such by the party submitting the information, that is not available in the public domain and the release of which could reasonably be considered to cause or threaten to cause harm to an interest of the person or entity that supplied the business information to the party.

3. No person may have access to BCI except a member of the Secretariat or the Arbitrator, a party's employee participating in the dispute, and a party's outside advisor for purposes of this dispute. However, an outside advisor is not permitted access to BCI if that advisor is an officer or employee of an enterprise engaged in the production, export, or import of cattle, swine, beef, or pork. When a party provides BCI to an outside advisor who is an employee or officer of an industry association of such enterprises, that party shall obtain written assurances from such advisor that he or she has read and understands these procedures and will not disclose any BCI in contravention of these procedures.

4. A party obtaining access to BCI as a result of the BCI being submitted in this dispute shall treat it as confidential, i.e. shall not disclose that information other than to those persons authorized to receive it pursuant to these procedures. Each party shall have responsibility in this regard for its employees as well as any outside advisors for the purposes of this dispute. BCI obtained under these procedures may be used only for the purpose of providing information and argumentation in this dispute.

5. A party submitting or referring to BCI in a document shall mark the cover and each page of the document to indicate the presence of BCI in the document as follows: BCI shall be placed between double brackets (for example, [[xx,xxx.xx]]). The cover and the top of each page of the document shall contain the notice "Contains Business Confidential Information". Any BCI that is submitted in electronic form shall be clearly marked with the phrase "Contains BCI" on a label on the storage medium, and clearly marked with the phrase "Contains BCI" in the electronic file name.

6. In the case of an oral statement containing BCI to be delivered in the session not open to public observation as foreseen in paragraph 3 of the "Procedures for an open substantive meeting of the Arbitrator," the Arbitrator should ensure that only persons authorized to have access to BCI pursuant to these procedures are permitted to hear the statement.

7. The parties and the Arbitrator shall store all documents containing BCI so as to prevent unauthorized access to such information.

8. The Arbitrator shall not disclose BCI, in its decision or in any other way, to persons not authorized under these procedures to have access to BCI. The Arbitrator may, however, make statements of conclusion drawn from such information. Before the Arbitrator makes its decision publicly available, the Arbitrator shall give each party an opportunity to ensure that the report does not contain any information that it has designated as BCI.

_____

[4] These procedures are adopted according to, and are an integral part of, the Arbitrator's Working Procedures of 6 July 2015.

ANNEX B

ARGUMENTS OF THE PARTIES

ANNEX B-1

EXECUTIVE SUMMARY OF THE ARGUMENTS OF CANADA

I. INTRODUCTION

1. This arbitration is the culmination of six years of WTO litigation, beginning with Canada's request for the establishment of the Original Panel in the WTO proceedings concerning the United States' country-of-origin labelling requirements. Canada prevailed at all previous stages in this dispute. In this proceeding, Canada is before the Arbitrator to defend its request for authorization to suspend concessions to the United States in the amount of CDN $ 3.068 billion per annum, which reflects the devastating losses that continue to be inflicted on the Canadian cattle and hog industries. The United States chose to request this arbitration instead of bringing itself into compliance with the recommendations and rulings of the DSB.

2. In accordance with the DSU, and as demonstrated by previous arbitrations under DSU Article 22.6, the United States must successfully challenge the accuracy of the level of nullification or impairment proposed by Canada, rather than just proposing alternative scenarios of its own. Previous cases have also been clear that it is only after the United States has met this burden, that the Arbitrator can assess alternatives to determine the level of nullification or impairment. The United States has failed to make its *prima facie* case in discrediting Canada's methodology.

3. Canada and the United States agree that the level of nullification or impairment should be calculated based on the benefits that would accrue to Canada "but for" the amended COOL measure: a comparison between the actual situation that existed following the expiration of the reasonable period of time (RPT) to comply, and the situation that would have prevailed in the period that follows the expiration of the RPT if no WTO-inconsistent COOL requirements had ever been applied by the United States. Critically, in measuring the level of nullification or impairment, Canada's methodology takes into account any lingering effects of the COOL labelling requirements.

4. Canada drew attention at the meeting of the Parties to the real and devastating losses experienced by Canada due to the introduction of the COOL requirements, by highlighting the evidence in the marketplace that illustrates the damage. In particular, Canada focused on the fed-hog industry, which suffered dramatic losses in export quantities. Fed hog exports dropped from 48,778 per week to 10,051 per week after the introduction of the COOL requirements. After the amendments to the initial COOL measure came into effect in November 2013, exports fell further to 7,833 per week through the end of 2014.

5. The decline in fed-hog exports following the two-stage adoption of the COOL requirements is so striking that restoring the volumes lost since September 2008 would require an increase of 500% from 2014 Canadian fed-hog export levels. In addition to the huge decline in export quantity, the fed-hog industry also suffered a loss of price. Comparing the pre-COOL period to the period after the amended COOL measure, the fed- hog price basis fell by about $0.09 per pound or about 11% based on 2013/14 prices.

6. These remarkable losses that occurred in the real hog market should be compared to the simulated world imagined by the United States, which suggests a negligible drop in imports and price compared to reality. The drop in exports following the introduction of the COOL requirements was large for each of the four livestock categories. In contrast, in every case the U.S. model suggests that the impacts of the COOL requirements were tiny.

7. Canada's approach remains superior because it is a methodology that accurately captures the impact of the amended COOL measure on the Canadian cattle and hog industries. It does so by using real-world data, and by accurately capturing the differential impact of the amended COOL measure on the Canadian cattle and hog industries. The model proposed by the United States fails to do this as it relies on simulations without any connection to reality, and does not use real data to measure the impact of the amended COOL measure.

II. CANADA'S METHODOLOGY IS THE ONLY APPROPRIATE METHODOLOGY TO MEASURE CANADA'S LOSSES

8. Canada's methodology is the only appropriate method of assessing losses in this case because it accurately and directly measures the level of nullification or impairment suffered by Canada. Canada uses an econometric analysis to assess the losses, which employs real-world and appropriate data that capture the differential impacts of the COOL requirements on Canada's cattle and hog industries.

9. Econometric modeling is appropriate in this case because such models are routinely used to estimate the market impact of a regulatory event. The assertion by the United States that an econometric approach should not be used in a DSU Article 22.6 arbitration is unreasonable and contradicts the basic economic principle that real-world data should be used if they are available. Moreover, the United States argument that it should not be used in this context is untenable, given that the U.S. model relies on elasticities generated by econometrics.

10. The econometric model submitted by Canada is also the most direct way to assess the impact of the COOL requirements on Canada's cattle and hog industries. The purpose of such a model is not to capture all the complexities in the market, and reflects the current practice among leading economists to reduce complexity and focus carefully and parsimoniously on the specific policy question at hand.

11. At the heart of Canada's analysis is the differential impact of the amended COOL measure on the price of Canadian livestock and the quantities exported. Canada's Methodology Paper captures this differential impact, which is reflected in a widening of the price basis between fed and feeder cattle and hogs in the United States compared to those exported from Canada, as well as a reduction in import quantities of Canadian livestock. Canada's model is the appropriate model to use in this proceeding because the U.S. model, as explained below, fails to incorporate the differential impact of the amended COOL measure and therefore does not accurately capture the losses suffered by Canada.

12. Further, Canada's model focuses solely on the impacts of the labelling requirements and avoids including extraneous variables that would introduce bias to the measured impacts of the amended COOL measure. More specifically, Canada only included variables that have a differential impact on either the price basis or quantity. The inclusion of any others is not needed for Canada's approach of isolating the impact of the amended COOL measure.

A. Price Basis Captures the Differential Impact of the COOL Requirements

13. Canada's methodology uses the price basis as the dependent variable as it allows for the isolation of the differential effect of the COOL requirements on the export price of Canadian cattle and hogs destined for the U.S. market. It does this by automatically capturing the impacts of a host of variables that affect livestock prices in both countries in a similar way. With these factors controlled for in the price basis, the methodology need only include those variables that represent factors with differential impacts on Canadian and U.S. livestock prices. Canada has done so, by including variables for the exchange rate, seasonality, two BSE events (for cattle), and the closing of the Maple Leaf Foods plant (for fed hogs). These differential variables cause fluctuations in the price basis, and they have been included on the right hand side of the equations to ensure that they are controlled for in Canada's methodology.

14. To use the absolute price in Canada's methodology, as the United States advocates, would mean that the effects of numerous other variables that affect U.S. and Canadian livestock demand and supply would not be effectively controlled for in the methodology. As a result, any rise in the Canadian price that is caused by other factors (including those that are inherently controlled for in the price basis), could be erroneously interpreted as being caused by the amended COOL measure. Further, to use the U.S. price as an explanatory variable would create bias in the regression model because it is endogenous. This means the U.S. price is correlated with the error term in the regression model and all estimated coefficients in such an equation are biased. Because many additional variables would need to be included to control for COOL, statistical issues would arise leading to the problem of spurious regressions. Despite these major problems, in response to a request by the Arbitrator, the United States attempts to use absolute price in Canada's

methodology. The result is an internally incoherent model with irrational results. In fact, the results actually favour Canada as the effect of the COOL requirements become cumulative in such a methodology.

15. The United States asserts that price basis exaggerates the estimate of the level of nullification or impairment because it includes any increase in U.S. price that may be a result of the COOL requirements. The United States is incorrect because the non-discriminatory shared costs of COOL that increase the U.S. price also increase the Canadian price; likewise, any non-discriminatory influence of COOL that causes a decrease in the U.S. price would decrease the Canadian price by the same amount. These effects are not reflected in the price basis. Moreover, any impact of the COOL requirements on raising the U.S. price is minimal because Canadian imports of cattle and hogs only represent between 2% and 4% of the massive U.S. market. To suggest that the COOL requirements would raise the U.S. price when the Canadian share of the market is so tiny just does not make any sense. Indeed, this conclusion is reflected in the Tonsor et al. (2015) report commissioned by the USDA.

16. The United States has incorrectly characterized the discussion in Pouliot and Sumner's *Food Policy* article (Exhibit US-35 (22.6)) as supporting its position that price basis should not be used in Canada's methodology. However, the authors of that paper *did* use price basis for their analysis because it was and is the most appropriate measure to determine the impact of the COOL requirements on price. Further, the United States has tried to argue that Canada's approach is at odds with the academic literature generally, but in its own submission it cites more articles that use the price basis rather than absolute price (see U.S. comments on Question 35).

B. The Variables Proposed by the United States Do Not Meet the Criteria for Inclusion

17. Canada has consistently argued that the explanatory variables proposed by the United States do not belong in Canada's methodology because they do not meet the criteria for inclusion.

18. Canada has shown that the variables proposed either do not have a compelling economic rationale as to their differential impact, have not been supported by empirical evidence by the United States, or both. Canada specifically addressed variables proposed by the United States in respect of (i) economic fluctuations or recession; (ii) feed costs; (iii) transport costs; (iv) other competing imports; and (v) drought. Each of these is addressed summarily below.

1. Economic Fluctuations or Recession

19. There is no compelling economic reason for inclusion of this variable as although unemployment in the United States may have led to less meat consumption, this change did not differentially affect demand for livestock buyers for U.S. animals as compared to Canadian animals. The United States has not been able to provide any empirical evidence to suggest otherwise.

20. Further, the United States made a serious specification error in using a variable that reflects only the recession in the United States, when it is the differential impact of the recession that would be relevant. Canada has also noted that any attempt to measure the differences in the two recessions would involve imprecision due to time lags in macro-economic conditions and the impact on export shipments or price basis. Even the best proxy data available would have at most a small and indirect influence on export quantities, and none at all on price basis.

2. Feed Costs

21. Potential feed cost variables that affect export quantity or price basis would need to reflect any movement in the difference of costs per unit of weight gain of cattle and hogs between Canada and the United States, as it is the relative cost of a pound of weight gain that affects the location of where an animal is raised in its lifecycle. Appropriate econometric specification would require developing some information and assessment of livestock producer expectations of future costs of feed and feed rations, and Canada knows of no such data. Further, the United States has not provided any empirical evidence that such a variable would have a differential impact on prices or quantities. In any event, even if there are fluctuations in feed costs, these would not cause a

U.S. livestock buyer to pay more or less for a U.S.-born animal as compared to a Canadian-born animal.

3. Transport Costs

22. In theory, transport costs could affect the price basis and export quantities. However, the United States has provided no empirical evidence that transport costs have affected price differences between Canada and the United States. In fact, the United States has provided evidence with respect to fuel costs in the United States only. Canada provided evidence on transportation costs with respect to feeder-pig transactions covered by the *Procedures of the Arbitrator on Business Confidential Information*, which cannot be summarized here.

4. Other Competing Imports

23. Imports from Mexico could in theory affect the quantity of imports from Canada, but there is no empirical evidence that they have done so. Indeed, such an impact is highly unlikely given the geographical separation of Canadian and Mexican imports, and the size differences in the feeder cattle imported from the two countries. With respect to price, any influence of imports in the market would affect prices of comparable U.S. and Canadian animals to the same degree, and would be very small in any case because Mexican feeder cattle comprise a trivial share of the huge U.S. feeder-cattle market. Further, because this variable is endogenous, controlling for Mexican imports by including the variable in a price basis estimating equation would yield biased estimates.

5. Drought

24. The empirical evidence suggests that the theory put forward by the United States, that the impact of the drought in the United States (and Mexico) would have led to an increase in supply from Mexico and a decrease in demand for Canadian feeder animals, is incorrect: feeder-cattle exports from Canada increased due to the drought by well over 100,000 head from 2013 to 2014. Regardless, the feeder cattle in Canada are not substitutable for those in Mexico. Further, the United States has not provided any evidence to suggest that the drought affected the price of Canadian feeder animals compared to U.S.- origin feeder cattle. Designing a variable to take into account the drought would be difficult because of the complex timing of events, the cattle cycle and producer expectations.

C. The Econometric Estimations with the United States Proposed Variables

25. At the request of the Arbitrator, Canada has produced estimations with all of the above variables included in its estimations, both individually and cumulatively, to determine their effect on the price basis. The regressions for all of the above variables are included in Exhibit CAN-68 (22.6) through Exhibit CAN-76 (22.6). Overall substantive and statistical results changed little with the addition of these variables. Some of the DCOOL1 and DCOOL2 effects are higher, and some are lower. As the United States has admitted, there is no systematic pattern of changes compared with the results in Canada's Methodology Paper. Therefore, there is no error in Canada's approach. Further, these outcomes align with the results of the estimations done at the request of the Original Panel.

26. As when included separately, most estimated coefficients of these variables included all together are not statistically significant. Nevertheless, the inclusion of all the variables would increase Canada's export losses by $210 million, to a total of $2.254 billion. Adjusting for the errors the Arbitrator found in its Table related to Question 42, Canada's total losses increase even more, from $2.981 billion to $3.234 billion. Even when the addition of these variables results in higher losses to Canada, Canada's position continues to be that the losses calculated in its Methodology Paper remain more appropriate and accurate.

27. Contrary to the requests of the Arbitrator, the United States did not produce estimations with all of the above variables in all of its price calculations individually, and cumulatively. Instead, the United States limited its analysis to 850-pound feeder cattle only, forgoing any estimations on the other weight classes of feeder cattle, and the other three categories of livestock entirely. Not only has the United States failed to provide any empirical evidence for its position

that these variables should be included, it has also cherry-picked one category, which is the weight class for which the price basis effects of COOL are the smallest.

28. Regardless, even when the United States uses its mis-specified variables, the estimations that result favour Canada or are neutral to Canada. More specifically, when the United States includes the recession variable the effect of COOL on the price basis is significantly larger than in Canada's Methodology Paper. However, despite this result that favours Canada, Canada continues to take the position that this variable should not be included. For both feed costs and transportation costs, the inclusion of these variables by the United States changes the results very little. When Canada corrects for the error the United States makes in its estimations for monthly feeder-cattle exports, the results are similar to those in Canada's Methodology Paper. Canada was unable to replicate the data the United States used for the drought because the United States failed to provide interpretive information. In any case, the U.S. estimates only have a slight impact on the price basis.

29. When these variables are added by both the United States and Canada, the results change little. This proves that Canada's model is robust and its specifications are accurate.

D. Canada uses Real-World and Accurate Data to Assess its Losses while the United States does not

30. An econometric approach requires real-world marketplace data on the situation that prevailed before and after the measure at issue. In the current case, detailed, official government and industry data do exist before and after the amended COOL measure. In these circumstances, it makes no economic or empirical sense to ignore the wealth of data available. This is especially true when the alternative U.S. model is based solely on theory, and simulations built on faulty assumptions. It is not only possible, but highly preferable to use the available marketplace data in any calculation of Canada's losses.

31. Canada's Methodology Paper outlines the data sources it uses in its econometric assessment of its losses in Appendices I and II. The weekly data go back twelve years in the case of hogs, and ten years for cattle. They are drawn from both U.S. and Canadian government sources (with the exception of feeder pigs where no such data are available), as well as industry, and are the most detailed, accurate, relevant and specific data for the task at hand. The United States takes issue with Canada's choice of the U.S. government data set, as if this were a major flaw with Canada's methodology. This is simply not a valid argument. U.S. Department of Agriculture APHIS data are derived from actual border inspections of livestock shipments, as opposed to the values of shipments and associated quantities. The USDA APHIS data are valid, accurate and detailed. Further, the Original Panel considered the use of USDA APHIS data as being acceptable and reliable.

32. In contrast, the United States uses no real-world data to determine the impact of the amended COOL measure or to determine how the markets have responded. The only real data the United States uses is for its 2014 base-year calculations. The United States has essentially abandoned the wealth of readily available data and adopted a model that is suitable for use only when there are no such data available.

33. The United States also did not use appropriate data for monthly imports of feeder cattle when requested to by the Arbitrator. It not only failed to use the data it suggested it would (U.S. Department of Commerce data), but then used an inaccurate USDA summary data set that includes only some of the relevant livestock categories, leading to misleading and incomplete results. The United States also mistakenly specified the key COOL variables. When these errors were corrected by Canada, the results are very similar to when weekly data are used. None of the effects is different to a statistically significant degree and all effects are strongly and significantly negative.

34. Further, at the request of the Arbitrator, Canada used monthly data instead of weekly data in its estimations. The results are found in a table in Canada's responses to Question 37. Despite some expected differences, the results are very similar to the results using weekly data. None of the differences is statistically significant. In fact, using monthly data causes the estimate of Canada's losses to rise above the $3.068 billion that Canada reported in its Methodology paper.

Also at the request of the Arbitrator, Canada changed the base period by several weeks, extended the sample period for cattle, changed the dates of the COOL dummies, and used a different implementation date for fed cattle, larger feeder cattle and fed hogs. The results were generally not significantly different from those in Canada's Methodology Paper and any changes were predictable.

E. Canada's Data for Feeder Pigs are Accurate and Verifiable

35. The parties agree that there are no available feeder price data amenable for statistical analysis in this case. As a result, Canada provided evidence covered by the *Procedures of the Arbitrator on Business Confidential Information*, which cannot be summarized here. In any event, Canada's evidence is further supported by econometric analyses and simulations. It is also consistent with the losses suffered in the three other livestock categories.

III. METHODOLOGY AND CALCULATION OF PRICE SUPPRESSION LOSSES

36. In addition to the loss of revenue resulting from the reduction in livestock exports to the United States and the lower prices received for those livestock that were exported, the amended COOL measure has caused Canadian livestock producers to suffer losses resulting from the reduction in the price received in Canada for cattle or hogs that were not shipped to the United States.

37. Canada's estimate of these losses is carefully constructed and conservative. First, it avoids double counting of suppressed exports that are already included in the estimate of the loss of export revenue. It does this by ensuring that in the price-suppression equation, the quantity of animals in Canada to which price suppression applies is reduced by the implied loss of quantity of exports that are estimated to be part of the loss of export revenue. Second, it does not include the reduced production and supply from Canadian livestock industries due to the lower prices that they face.

38. The losses due to domestic price suppression for all categories of livestock except feeder pigs were based on appropriate industry and government data. The domestic losses for feeder pigs were calculated on the basis of the most reliable data Canada could access. Both parties agree that there is no public government source for data that provides consistent time-series price data amenable for statistical analysis of the price of feeder pigs in Canada. Therefore, Canada relies on evidence covered by the *Procedures of the Arbitrator on Business Confidential Information*, which cannot be summarized here.

39. A high level of integration between the Canadian and U.S. markets results in price arbitrage between the Canadian export price of live cattle and hogs and the price of domestic cattle and hogs. As a result of the amended COOL measure, once a drop occurred in the export price, the price of the domestic livestock adjusted accordingly. This arbitrage mechanism is well accepted as a "given" in the industry. There are no domestic factors that impede this mechanism. Canada is a price taker for all categories of cattle and hogs as it supplies only a trivial market share for each in the massive U.S. market (in all cases less than 4%, and in most cases less than 2%.) There is therefore a direct causal link between the amended COOL measure and the domestic price-suppression losses experienced in Canada. Because of this arbitrage between markets, the price impacts for the domestic price-suppression analysis are the same as those that are used in the calculation of export revenue losses.

40. In response to Question 42 from the Arbitrator, Canada acknowledged an inadvertent error in its original calculation of price-suppression losses for feeder pigs (of $325,400,000, as compared to the Arbitrator's calculation of the same losses in the amount of $237,805,000). As to the price-suppression losses claimed by Canada in respect of the other three animal categories, it explained the small discrepancies between the numbers contained in Canada's Methodology Paper and those contained in the Tables to Question 42 from the Arbitrator.

IV. LOSSES DUE TO DOMESTIC PRICE SUPPRESSION ARE SUPPORTED BY BOTH THE DSU AND THE JURISPRUDENCE

41. The amended COOL measure impaired Canada's benefit by adversely affecting the conditions of competition of Canadian livestock exports to the United States, which resulted in reduced prices and export volumes. As a direct result of the violation of national treatment and the highly integrated nature of the two markets, the livestock that were not exported to the United States also received a lower price in Canada. The resulting increased supply in Canada and the lack of an alternative export market suppressed the prices of these animals in the Canadian market, resulting in specific and quantifiable losses.

42. Based on the highly integrated nature of these two markets, these are direct losses from the denial of a direct benefit. In the alternative, domestic price suppression losses are at the very least losses that result from the impairment of an indirect benefit of national treatment. Regardless, both direct and indirect benefits are covered by DSU Article 3.3 and therefore by DSU Article 22.4.

43. The United States concedes that the nullification or impairment suffered by Canada in this case includes export losses. However, the United States challenges Canada's claim for domestic price-suppression losses, arguing that these losses do not flow from one of the "benefits" accruing to a Member under the provisions of the covered agreements, in this case the GATT 1994 and the TBT Agreement. The United States is incorrect.

44. In this proceeding, the denial of the "benefit" in question is based on market access, as the United States acknowledged at the meeting of the Arbitrator with the parties. As Canada has explained, its entitlement to national treatment under the GATT 1994 and the TBT Agreement provides a benefit not to see the competitive positions of Canadian cattle and hogs adversely affected by the amended COOL measure, including through domestic price effects. The jurisprudence supports this position. As was stated in *US-Byrd Amendment*, the denial of benefits accruing (which is a broader concept than the breach of an obligation) is not to be confused with the violation of the obligations itself.

45. Contrary to what the United States argues, there is no indication that losses need to be limited to those suffered in the territory of the respondent. Indeed, the indirect losses claimed by requesting parties in *US-Byrd Amendment* were in the form of exports to other markets. These were not rejected in principle, but because they were too speculative and unquantifiable. A limit to the scope for a claim of indirect losses was decided in *EC-Bananas* where the panel rejected a losses claim based on exports through a third country, because the claim was based on inputs into the final product made by another country. In contrast, Canada is the direct exporting party, the price-suppression losses are in its own market.

46. Further and crucially, indirect losses, like direct losses, require causation by the impugned measure, and verifiable information to support the claim. Canada's claim has both. Causation occurs through the arbitrage mechanism, discussed above, and Canada's careful calculation of these losses is based on verifiable government and industry data.

47. The United States has repeatedly failed to define the "benefits" to which it refers; instead, it vaguely states that these benefits "relate to trade effects". It erroneously relies on cases interpreting the level of nullification or impairment as being concerned with the "trade effects" of the impugned measure, in order to claim that the jurisprudence has limited the scope of "trade effects" to export losses. This is a mischaracterization of the jurisprudence. On the contrary, WTO jurisprudence suggests a broad interpretation of "trade effects". Further, there is nothing in the DSU that limits the level of nullification or impairment to export losses.

48. Contrary to what the United States argues, cases that focus on the "trade effects" of nullification or impairment are not limited to an assessment of losses based on exports alone. For example, in *US-1916*, "trade effects" included the settlement awards and judgments of the 1916 Anti-Dumping Act against the complainant's companies, and neither involved an assessment of trade flows. In *US-Byrd Amendment*, the Arbitrator rejected a narrow interpretation of "trade effects", dismissing the U.S. position that nullification or impairment was limited to the direct trade loss resulting from the violation.

49. It is incorrect for the United States to argue that all domestic losses claims are inadmissible or *ultra vires* the DSU. In *US-Gambling,* a claim for domestic losses was based on the "multiplier effect" of the impugned measure on the broader Antiguan economy. The Arbitrator did not reject the claim for domestic losses because it was incompatible with the DSU but because the claim contradicted some of the other Antiguan arguments.

50. There are no WTO arbitrations under DSU Article 22.6 that have rejected a claim for domestic price-suppression losses. In the two cases that the United States cites as support for its argument that "trade effects" are limited to export trade (*EC-Hormones* and *EC-Bananas*), the complainants only claimed and argued for export losses.

51. Unlike the cases of *EC–Hormones*, *EC–Bananas*, or other "trade effects" cases, in which the markets concerned are not integrated, the live cattle and hog markets of Canada and the United States were almost fully integrated before the adoption of the original COOL measure. The live cattle and hog industries in both countries are structurally similar and interdependent. As a result and as the United States has recognized, any change in supply or demand in the United States will directly and causally affect Canada.

52. Further, there is absolutely no merit in the argument made by the United States that, if the level of suspension of nullification or impairment includes domestic price-suppression losses, the level of suspension has to be decreased by a calculation of the "broader economic effects on the U.S. economy". The level of nullification or impairment is an independent calculation based on the losses of the complaining party. There is no calculation with respect to the level of suspension of concessions. The meaning of "equivalence" is that the level of suspension of concessions will equal the level of nullification or impairment that is determined by this arbitration.

53. Finally, the burden is on the United States to make a *prima facie* case that the level of suspension is not equivalent to the level of nullification or impairment. In comparing the precise domestic price suppression losses claimed by Canada, to the speculative impact that the suspension could have on the U.S. economy, the United States has failed to meet its burden of proof.

V. THE EDM IS MISSPECIFIED AND INAPPROPRIATE IN THESE CIRCUMSTANCES

54. As explained above, the United States has failed to meet its burden of proof because it has not demonstrated that Canada's proposed level of suspension of concessions exceeds the level of nullification or impairment that resulted from the COOL labeling requirements.

55. Instead of fulfilling this burden, the United States has presented a model that is conceptually ill-suited for this case. However, more importantly, the Equilibrium Displacement Model (the "EDM") proposed by the United States utilizes incorrect elasticities, fails to consider differential segregation and compliance costs, fails to use real-world data outside of the base year, and is rife with faulty assumptions. The model also suffers from serious numerical errors. As a result, the U.S. model is fundamentally flawed and severely underestimates the losses faced by Canada.

A. The EDM is Inappropriate in these Circumstances

56. Economists are clear that when appropriate market data are available, an econometric analysis is preferable to a simulation model. Indeed, hundreds of refereed articles in the economics literature have examined data before and after the introduction of a government measure by using econometrics, including in the most up-to-date peer-reviewed academic literature. There is simply no reason not to adopt an econometric methodology in this case. Nevertheless, the United States has adopted an EDM, which is a simulation model that does not use real-world data on the actual impacts of the amended COOL measure.

57. A simulation analysis is best suited for assessing the future impact of a policy change or measure, when the impact of a policy or measure has not yet been observed. This is precisely why a simulation analysis was used in Brester et al., Lusk et al., and Tonsor et al. These studies were done before the policy was put in place and thus are predictive only, and do not benefit from real-world data or the knowledge of how the COOL measure was actually applied.

B. The EDM Uses the Wrong Elasticities

58. The EDM uses short-run elasticities when long-run elasticities should have been used. Short-run elasticities are appropriate in situations in which very little time is needed for the domestic market to reach equilibrium. In this case, the Canadian market has still not completely adjusted after six years, and therefore the use of short-run elasticities is inappropriate. Further, using short-run elasticities is inconsistent with the underlying assumption in the EDM of adjustment from one full market equilibrium to another with no adequate market adjustment time. The United States has in fact admitted that it may not have chosen the correct elasticities for this case.

59. As an example, the United States' model relies on a study in Brester et al., which obtained low export-supply elasticities using Canadian export-share data that are no longer applicable and by using short-run elasticities over an adjustment period of just three months. In reality, cattle-supply adjustment takes much longer than this. The use of long-run elasticities and the current export-share data would have produced much higher export supply elasticities, and as a result, much higher losses. This assumption of full equilibrium using short-run elasticities highlights an internal inconsistency in the EDM that leads to a major underestimation of losses suffered by Canada.

60. The United States has also erred in using inappropriate "import supply elasticities" (which should be called export supply elasticities) for U.S. imports of feeder and slaughter animals, which are equivalent to Canadian exports of these animals. In essence, since no such elasticities exist, the United States sets these categories to the supply elasticity for U.S. imports of wholesale meat. Similarly, the U.S. assigns a certain elasticity value to beef import supply and two livestock import-supply elasticities, with no explanation. These arbitrary assignments further undermine the U.S. model.

61. The crucial point is that the United States has used export supply elasticities that are far too small for each category of animals from Canada and feeder cattle from Mexico. This is a major error because export supply elasticities are one of the most important parameters in a simulation model since they determine the magnitude of the different effects on export quantities and prices in a simulation model. Specifically, the United States has used the wrong underlying domestic (Canadian and Mexican) elasticities and market shares in the export supply elasticity formula, which resulted in artificially low figures. To illustrate this grave flaw in the EDM, Canada provided a chart containing the proper elasticities in its Comments on the Responses of the United States to Question 46 of the Arbitrator (dated 8 October 2015). The United States position that the elasticities proposed by Canada are not supported by academic literature is completely false, and in any event, they are determined by a standard formula included in the literature as well as in Canada's submissions.

62. A stark example of the U.S.'s flawed export supply elasticities is found in the responses to Question 46 of the Arbitrator. Canada has shown that it was the larger export shares of Canadian fed hogs and feeder pigs sourced from the dated Wohlgenant study that resulted in much smaller implied export-supply elasticities than those obtained by Canada using current export shares. Even worse, for feeder cattle the United States failed to download the proper export data from their own source table and use clearly misrepresented elasticities from their own source document. Canada uses the much more recent supply and demand elasticities from the Tonsor et al. (2015) report, also cited by the United States, to illustrate the correct calculation of export supply elasticities with the proper export share. Similarly, in response to Question 51, Canada also showed that it is possible to obtain proper elasticities, which account for market realities, when appropriate data are used.

C. The EDM Fails to Account for Differential Segregation Costs

63. One of the most fundamental errors in the EDM is its failure to take into account differential compliance and segregation costs. A proper simulation analysis would consider how market forces determine how imports of Canadian cattle and hogs are traded relative to the equivalent U.S.-origin animals. Indeed, this is the very rationale for Canada's complaint. The COOL labeling requirements have undeniably resulted in greater implementation costs for U.S. firms that use imported livestock as opposed to U.S. firms that exclusively use domestic-origin livestock. However, in the EDM, the U.S. domestic supply chain is assumed to have the same segregation

costs as a supply chain that uses both imported and U.S.-origin livestock. This assumption has fatally biased the results of the EDM. For example, Equations 18-23 of the U.S. EDM contain the misplaced U.S. assumption that changes in the price of U.S. livestock must equal changes in the price of imported livestock of the same weight categories.

64. The United States' denial of the existence of differential compliance and segregation costs has been clear throughout these proceedings. While the United States continues to claim that the EDM reflects the reality of the U.S. livestock and retail beef and pork markets, this is totally inaccurate. As both Canada and Mexico have noted, the EDM fails to consider the crucial fact that the COOL measure influenced buyers to treat livestock of different origins differently in order to comply with the labelling requirements. Accordingly, the inaccuracy of the EDM could only be corrected through a re-structuring that accounts for these differential costs imposed on all intermediate buyers of livestock. However, the United States refused to do this, even when requested to do so by the Arbitrator in Question 44.

D. The EDM is Plagued by Additional Faulty Underlying Assumptions

65. In addition to the most serious flaws explained above, the results of the EDM are biased by a host of other faulty assumptions, as Canada outlined in its submission of 12 August 2015.

66. For example, the EDM assumes perfect competition amongst firms in the U.S. meat processing industry such that individual firms do not influence prices. The EDM also assumes efficiency of all plants regardless of size, that all animals are used in all markets by all plants and firms, and that all markets clear in a complete and perfect equilibrium both with and without the amended COOL measure. Furthermore, it assumes that there are no market imperfections of any sort, and no path for adjustment or transition.

67. These assumptions are obviously at odds with reality and therefore provide a flawed foundation for the EDM. Because the EDM is based on these assumptions as well as others listed above, its results are completely unreliable.

E. Reliability of the Data and Numerical Errors

68. Canada finally notes the many numerical errors that were made in the EDM calculations, as discussed in Comments on the Responses of the United States to the Questions of the Arbitrator (dated October 8 2015). Moreover, the reliability of the data used in the EDM calculations is seriously flawed because some studies relied upon are decades old and unpublished.

69. Further, the United States has committed a series of serious data errors in its submissions. For example, it uses United States Census data for the base year even when they are not suitable because they do not provide information specific to imports of barrows and gilts for slaughter. The United States arbitrarily divided total hog imports by half to create the data for the fed hog category.

70. In short, a simulation cannot replace the need to examine the impact of the measure in the real world. As demonstrated in Canada's calculations using the EDM in response to Question 51, accurately calculated elasticities that account for market realities can yield results that are plausible. However the U.S. calculations in the EDM are based on inaccurate and unrealistic elasticities. These theoretical and practical flaws in the EDM illustrate the inappropriateness of using a simulation model in these circumstances and further demonstrate the suitability of Canada's econometric approach.

VI. CONCLUSION

71. The United States has failed to make its *prima facie* case to discredit Canada's methodology to determine the level of the nullification or impairment of benefits it is entitled to. Canada has demonstrated that its methodology is sound and accurately represents the devastating losses Canada has been suffering for seven years.

72. Indeed, when Canada includes the variables proposed by the United States, uses monthly instead of weekly data, and changes dates as requested by the Arbitrator, the results do not

change significantly, which demonstrates that Canada's methodology is robust. Similarly, even when the United States makes the changes to Canada's methodology requested by the Arbitrator, the results do not alter significantly and do not suggest that Canada's approach is flawed. The fundamental integrity of Canada's Methodology Paper remains intact and its calculations are accurate. Therefore, the Arbitrator should use Canada's methodology to award losses suffered by Canada in this case.

73. Canada respectfully requests that the Arbitrator find that Canada's level of nullification or impairment is as was specified in Canada's request to the DSB for authorization to suspend concessions to the United States, i.e. CDN $ 3.068 billion per annum, subject to a correction conceded by Canada in paragraph 40 of this Executive Summary.

ANNEX B-2

EXECUTIVE SUMMARY OF THE ARGUMENTS OF MEXICO

1. Mexico's Methodology Paper demonstrates that the COOL measure has reduced the prices paid for Mexican cattle in the United States, reduced Mexican export sales and supressed the prices of feeder cattle in the Mexican domestic market. Because the United States has not taken any steps to bring the COOL measure into conformity with its obligations, Mexico is seeking authorization to suspend concessions in the amount of USD 713.4 million.

2. In the present case, the Arbitrator's mandate under Articles 22.6 and 22.7 of the DSU is to determine whether the proposed level of the suspension of concessions requested by Mexico is equivalent to the level of the nullification or impairment of benefits accruing to Mexico as a result of the United States' failure to bring its WTO-inconsistent COOL measure into compliance. The level of the nullification or impairment that Mexico has suffered is the difference between the actual level of benefits accruing to Mexico at the time of expiry of the reasonable period of time (RPT) to comply as a result of the adverse effects of the COOL measure and the level of benefits that would have accrued to Mexico in a counterfactual scenario in which the COOL measure had never been adopted. This approach properly measures the full extent of the nullification or impairment caused by the COOL measure because it measures its adverse effect against the level of benefits that the parties negotiated under the covered agreements — i.e., benefits that prohibit the COOL measure from ever existing.

3. Mexico's methodology uses an approach that combines detailed econometric estimates and simulations to accurately calculate the level of nullification and impairment. First, an econometric model using observed data is employed to estimate the adverse effects of the COOL measure on the price of Mexican feeder cattle exported to the United States. Second, this estimated export price impact is then used to simulate a consistent reduction in exports of Mexican feeder cattle. Third, the estimated export price impact is used to measure the corresponding price impact in Mexico's domestic market. Export losses and price suppression losses are then calculated based on the adverse effects of the COOL measure.

4. In response, the United States proposes a novel simulation that builds on the currently observed market equilibrium and removes the costs associated with the COOL measure. The approach used by the United States is flawed in many ways. First, instead of using the available pre- and post-COOL data to directly estimate the adverse effects of the COOL measure, the United States purports to measure the impact of removing the COOL measure through a complicated theoretical model that is inconsistent with the actual effect of the COOL measure as found in the WTO rulings. Second, the United States' concept of calculating losses based on market outcomes with the COOL measure in place is fundamentally flawed as it assumes, *inter alia*, that the impact of imposing a measure is equivalent to that of removing it. Importantly, under the approach proposed by the United States, if the harms caused by a measure are not fully reversible, then the amount of nullification or impairment would inevitably be understated.

5. In *US – Upland Cotton (Article 22.6 – US)*, the Arbitrator confirmed that the party objecting to the proposed countermeasures bears the initial burden of establishing a *prima facie* case that the proposed countermeasures are not in accordance with the requirements of the relevant WTO provisions; if this initial burden is discharged, then it falls to the party proposing the countermeasures to rebut such a presumption.[1] This standard is consistent with the burden of proof applied in other arbitrations, including *EC – Hormones (US) (Article 22.6 – EC)*, *EC – Bananas III (Ecuador) (Article 22.6 – EC)* and *US – 1916 Act (EC) (Article 22.6 – US)*. Similarly, the arbitrator in *US – Gambling (Article 22.6 – US)* confirmed that the burden rested upon the United States, as the objecting party, to demonstrate that the level of suspension proposed by Antigua was not equivalent to the level of nullification or impairment resulting from the continued application of the WTO-inconsistent measure. For the purpose of discharging this burden, the Arbitrator emphasized that the United States must successfully challenge the accuracy of the level

[1] Decision by the Arbitrator, *US – Upland Cotton (Article 22.5 – US I)*, paras. 4.21-4.22.

of the nullification or impairment reflected in the counterfactual scenario proposed by Antigua, rather than merely proposing alternative scenarios of its own.[2]

6. Thus, the United States bears the initial burden of establishing a *prima facie* case that the level of suspension of benefits requested by Mexico is not in accordance with the requirements of the DSU. The United States has failed to discharge its burden. There are significant legal and conceptual errors in the United States' criticisms of Mexico's methodology and also in the alternative methodology that the United States proposes. Mexico's comprehensive analysis is the correct approach under the circumstances, and it has been properly applied to accurately estimate the level of nullification and impairment caused by the amended COOL measure. The United States' inaccurate criticisms and flawed alternative "Equilibrium Displacement Model" (EDM) are therefore insufficient to establish a *prima facie* case the Mexico's methodology is inconsistent with DSU Article 22.4.

7. In the event that the Arbitrator disagrees and finds instead that the United States has established a *prima facie* case, in whole or in part, then Mexico submits that its methodology remains the most appropriate approach to assessing the level of the nullification or impairment of the benefits that would accrue to Mexico but for the adverse effects of the amended COOL measure, subject to any adjustments that the Arbitrator determines are required.

8. Mexico emphasizes that, although Canada's approach is very similar to Mexico's, the Canadian methodology is not identical to that of Mexico. In particular, Mexico is able to rely on pricing data for Mexican cattle from sales within the United States, and that eliminates the relevance of certain variables discussed by the United States. For this reason, Mexico's analysis must be reviewed independently and evaluated on its own merits. The United States has not even attempted to explain how any alleged errors, omissions or defects would materially affect the outcome of Mexico's model if "corrected". Rather, the United States' approach is to avoid engaging with Mexico's proposed methodology altogether.

Mexico's estimation of export losses from the impact on prices for Mexican cattle in the U.S. market

9. Mexico's Methodology Paper uses regression analysis to estimate the economic impact of the COOL measure on the price of Mexican feeder cattle imported into the United States. The price of Mexican feeder cattle is measured in New Mexico and Texas and is compared to the price of U.S. feeder cattle measured at the same locations. Since prices are measured at the same locations, a limited number of factors explain their difference. Mexico's Methodology Paper found that the COOL measure depressed exported feeder cattle price by $0.187/lb.

10. The prices used in the Mexican regression model are measured in the United States. Once Mexican feeder cattle have crossed the U.S. border and are at their selling points in the United States, transportation costs and exchange rates do not matter as these costs are already sunk. Given that these costs have already been incurred, the price of Mexican feeder cattle is determined solely by the valuation for feeder cattle by U.S. buyers.

11. Before the COOL measure, U.S. and Mexican born feeder cattle of the same weight were perfect substitutes. Prices for animals of either origin at selling points in the United States were essentially the same, as animals of both origins were physically identical and because animals were not differentiated by origin in the U.S. supply chain.

12. The COOL measure caused differential treatment of feeder cattle across origins in the U.S. cattle supply chain. Since the price of Mexican fed cattle in the United States, which were imported from Mexico as feeder cattle, is discounted compared to fed cattle of U.S. origin, the prices of Mexican feeder cattle are discounted. In other words, the discount is passed back from transactions for fed cattle to transactions for feeder cattle.

13. Mexico's regression model estimates the impact of the COOL measure as revealed by the price basis. It is well-established in economics that prices summarize all the information in a competitive market setting. In a supply chain, this means that a shock at any stage of a supply

[2] Decision by the Arbitrator, *US – Gambling (Article 22.6 – US)*, paras. 3.23-3.24.

chain is distributed through the entire supply chain. Thus all demand and supply shifters that affect the U.S. cattle and beef industry are summarized in the prices for feeder cattle. The regression model does not attempt to explain a price-in level but instead seeks to explain the price basis. Given that both the prices of U.S. feeder cattle and Mexican feeder cattle summarize the supply and demand shifters that impact the U.S. beef and cattle supply chain, the price basis measures what differentially impacts these prices. Because U.S. feeder cattle and Mexican feeder cattle are identical except for their differential treatment because of the COOL measure, the price basis regression is able to measure the total impact of the COOL measure that is distributed down the supply chain onto the price paid for Mexican feeder cattle. Thus, the relevant variables to include in the regression model are those that explain the differential value to U.S. buyers that is distributed down the supply chain rather than all the variables that explain individual feeder cattle prices. The equations are not "truncated," as the United States alleges; rather they include the relevant factors and exclude those that are not relevant. Accordingly, Mexico's price basis equation reflects the difference between the price paid for Mexican feeder cattle and U.S. feeder cattle rather than the "difference between the U.S. price and the Canadian price" as stated by the United States.

14. The objective of Mexico's regression model is to explain how the differential treatment of cattle in the United States according to their origin affected the price paid for Mexico feeder cattle. As explained in the Methodology Paper and above, Mexico's regression model measures how the COOL measure differentially impacted the price paid for U.S. and Mexico feeder cattle as revealed by the price basis. With prices measured in the same locations, the number of variables that affect the basis is limited. A regression of the price paid for Mexico feeder cattle in the United States as a dependent variable with the U.S. price for feeder cattle would require the same set of explanatory variables as the basis regression presented in Mexico's Methodology Paper. However, such a regression model would be plagued with problems that the basis regression does not have. For example, the price of Mexican feeder cattle exported to the United States contains a unit-root as shown in Table 1 of Mexico's Methodology Paper. Thus, a conventional linear regression model would yield biased coefficients unless it is possible to find a cointegration relationship. The basis does not have a unit-root and thus can be used as a dependent variable in a linear model.

15. Contrary to the argument of the United States,[3] the Pouliot and Sumner (2014) study does not undermine Mexico's methodology. Pouliot and Sumner (2014) are correct in stating that it is theoretically possible that imposing the COOL measure would result in higher prices in the importing country and lower prices in the exporting country.[4] The increase in the domestic U.S. price, however, would be small in practice because the market share of imported cattle is small relative compared to the total size of the U.S. domestic cattle and beef industry. Moreover, the relevant import volumes change caused by the COOL measure is an even smaller share of the U.S. market. Further, there is a limited amount of commingling in the U.S. market, and thus most of the U.S. livestock supply chain handles single origin animals or meat, keeping costs of compliance with the COOL measure to a minimum.

16. In fact, a significant increase in prices for products of U.S. origin in the U.S. livestock supply chain would indicate large compliance costs and the regulation would not have been adopted if it imposed significant costs on U.S. firms. Arbitrage between animals of different origins would cause these prices to differ only by the difference in cost from the differential treatment associated with the COOL measure. Thus, even though the U.S. domestic price may marginally increase and the price of the imported animal decrease, the difference between the two prices reflects exactly the costs associated with the COOL measure that is passed on to Mexican feeder cattle. Note that even though the United States' EDM is wrongly specified in many ways, it yields results that are consistent with Pouliot and Sumner (2014) with the finding that the removal of COOL measure has a small impact on US domestic prices.

17. The United States' criticisms of Mexico's pricing data are also unfounded. Mexico's Methodology Paper uses price data collected by the U.S. Department of Agriculture's Agricultural Marketing Service (AMS). These data offer an unbiased measure of the price paid for Mexican feeder cattle exported to the United States and for the U.S. price of feeder cattle in New Mexico and Texas. The data provided by the AMS are appropriate for this analysis and in fact the United States used the same data source to calibrate its own EDM.

[3] United States' written submission, para. 78.
[4] Exhibit US-35.

18. The United States claims that the reports of the U.S. Department of Agriculture on which Mexico relies for pricing data are from auctions, and should be considered unrepresentative of Mexican exports. But Mexico did not use reports from auctions. Rather, it used the Department of Agriculture's reports on its daily survey of the prices of Mexican cattle sold in direct sales after crossing the border in New Mexico and Texas. The quantities of cattle covered by those reports comprise over 70 percent of all U.S. imports of Mexican cattle. Exhibit MEX-26 contains a statement by the Mexican industry explaining that Mexican cattle are sold immediately after they have been transferred to the U.S. side of the border.

19. Also importantly, Mexico's price basis analysis compares prices for Mexican cattle from Department of Agriculture reports with the prices for U.S. cattle from Department of Agriculture reports. Mexico's comparisons also control for the weight and muscle categories available from the Department of Agriculture reports. This results in the "apples to apples" comparison that the United States says is so important.

20. Remarkably, the United States criticizes Mexico's model for relying on actual market data for the relevant period. In fact, Mexico's Methodology Paper uses a careful, thorough and state-of-the-art approach. The econometric models include the relevant sets of control variables to measure the causal impacts of the COOL measure on prices and quantities.

21. Econometric modeling is not only a tool for forecasting as the United States asserts, but is also a well-accepted approach in economics to find causal relationships. A correctly specified regression controls for the relevant set of variables that affect a dependent variable. The inclusion of variables that do not pertain to the economic model and that are correlated with the variables of interest (dummies for the COOL measure in this specific case) biases the coefficients. Mexico's Methodology Paper uses a careful approach to include only the variables that are economically relevant in the regression models.

22. Mexico's regression model includes monthly dummy variables and a dummy variable for the drought to control for weather effects on the quality of feeder cattle. For instance, higher temperatures can cause more significant weight loss over the long distance.

23. Macro-economic variables (e.g. unemployment and GDP) and input cost variables are not relevant because the regression model compares the price of two substitute goods for which demands are affected by the same shocks. Input costs previously incurred are not relevant as they are already sunk costs at the moment when feeder cattle are sold.

24. Changes in quantities are not relevant in the regression model because the model compares prices for two substitute goods measured at the same locations that are impacted by the same demand-side variables. U.S. production volumes and Mexican export volumes of feeder cattle have nothing to do with how U.S. feeder cattle buyers differentiate the value of feeder cattle of different origins.

25. Increase in Mexican beef processing and beef exports are irrelevant to the difference in the U.S. prices paid for U.S. born feeder cattle and Mexican born feeder cattle. The decision to export Mexican feeder cattle has already been made once feeder cattle cross the U.S. border. As the regression model compares prices for feeder cattle of two origins at the same locations, it is their relative values to U.S. buyers that determine the difference in their prices. Mexican beef processing and beef exports have nothing to do with how U.S. feeder cattle buyers differentially value feeder cattle of different origins.

26. Mexican feeder cattle exported to the United States meet all animal disease requirements for exports to the United States. Although in the past animal diseases have had market impacts, they do not affect U.S. feeder cattle buyers' differential valuation of feeder cattle of different origins and thus should not be included in the regression model.

27. The data used in Mexico's Methodology Paper are monthly, and monthly dummy variables control for the effect of U.S. holidays, if any.

28. Including variables that do not have a causal effect on the relative price of U.S. and Mexican feeder cattle prices would bias the coefficients for the COOL variables if these variables are

correlated with the COOL variables. Thus, the regression model used in Mexico's Methodology Paper includes only the variables that are relevant to explain the difference between the price for U.S. feeder cattle and the price of Mexican feeder cattle, both measured by sales within the United States.

29. Contrary to the argument of the United States, all the variables to explain the difference in the valuation of U.S. buyers of feeder cattle from the United States and Mexico are included in the regression model. As explained in the Methodology Paper and above, macro-economic variables and other variables that can impact the livestock industry have nothing to do with the difference in value that U.S. buyers assign to feeder cattle of different origins. The United States asserts that other variables are relevant, but does not explain why.

Impact of the COOL Measure on Export Volumes

30. To estimate the impact of the COOL measure on the export of feeder cattle, Mexico's methodology uses a small simulation model. A simulation is the most appropriate approach to estimate the loss in export volume because there are causal variables that are missing to explain the export of feeder cattle. Notably, a variable to measure expectations about the drought does not exist. The model found that the COOL measure suppressed export volumes of Mexican feeder cattle by 342,476 for 2014.

31. The simulation is based on the estimated impact of the COOL measure on the price that is estimated econometrically. Given that the export price for Mexican feeder cattle is suppressed, there is a corresponding decline in the export volume of feeder cattle. This decline in the export quantity is measure based on calculated export supply elasticity that is based on elasticity estimates from the literature and a carefully measured export share of Mexican feeder cattle.

32. The United States attacks Mexico's export supply elasticity. But the export supply elasticity for feeder cattle exported to the United States is derived based on observed data in a transparent way in Mexico's Methodology Paper. The value of 4.0 for the export elasticity is very reasonable given the size of Mexican cattle market, the structure of Mexican cattle market and empirical evidence on supply and demand elasticities provided in Marsh (2003), among others. An elasticity of 4.0 is a conservative estimate that is consistent with observed data, the presented empirical evidence and the length of run over which the market adjusts to the introduction or the removal of COOL measures. The approach employed by Mexico is transparent and consistent with economic theory, unlike the elasticity employed by the United States in its EDM which considers the wrong length of run and employs an elasticity estimated for a completely different product, wholesale meat.

33. The United States also criticizes Mexico's suggested level of nullification or impairment based on its relative size compared to the current value of Mexican feeder cattle exports to the United States. The large relative value is not surprising given that the basis used to calculate the relative value, trade volumes and prices are depressed under the COOL measure. As an example of why the comparison offered by the United States is incorrect, if the volumes of trade under COOL had fallen to zero, then the relative size would have been infinite. Mexico notes that the United States alleges that it is incredible that Mexico could export 30 percent more feeder cattle. But Mexico's 2014 exports were 1,115,855 head, while its exports previously have been as high as 1,653,408 in 1995 and more recently in 2012 – before the amended COOL measure was implemented – were 1,468,189. It is therefore completely realistic that the Mexican industry can increase the quantity of its exports by 30% over the 2014 figures.

34. The United States' criticisms of Mexico's calculation of the impact of the COOL measure on Mexican exports of feeder cattle to the United States are both superficial and illogical. Equation (5) in Mexico's Methodology Paper (relating to the quantity of exported cattle) is the same as equation (31) in Exhibit US-4 that describes the United States' EDM. The single equation is sufficient and does not need to account for the complexity of the feeder cattle market in Mexico and the United States because, as explained previously, this is accounted for in the estimated coefficient of the impact of the COOL measure on the price of Mexican feeder cattle exported to the United States in the price basis regression. The United States attempts to mix the different analyzes together in a confusing and incorrect manner.

35. Exports of livestock from Mexico and Canada to the United States are significant but nonetheless represent a small share of the total U.S. livestock market (2013 Final Rule, 78 Fed. Reg. at 31367). Changes in export volumes from Mexico and Canada would thus have a small impact on U.S. livestock prices. Furthermore, the United States is a very large country and exports of cattle from Mexico are made to a very different area than the exports from Canada, thus limiting direct competition between Mexican and Canadian cattle.

The United States' EDM is Unreliable

36. The United States argues that only an EDM is appropriate for use in evaluating the impact of the COOL measure on Mexico, but that is incorrect. The relevant economic literature – e.g., peer-reviewed economic journals that focus on applied economics – confirms that econometric analysis is the standard approach for *ex post* evaluation of policy programs. Importantly, the U.S. government itself has collected and published most of the relevant data needed to estimate the impact of the COOL measure as used in Mexico's Methodology Paper. Therefore, there is no lack of reliable data needed to estimate the impacts of the COOL measure and no reason not to use it.

37. The United States also argues that econometric analyzes are not favored in WTO disputes, but overlooks that the Panel in *US – COOL* found that an econometric model provided robust evidence that the COOL measure had a negative and significant impact on Canadian imports shares and price basis.

38. The United States' EDM suffers from a number of deficiencies. In particular, the U.S. EDM is calibrated using short-run elasticities, while the full impact of the COOL measure can only be measured with a long-run economic analysis. The use of a short-run analysis grossly underestimates the impact of the COOL measure.

39. Also, the structure of the U.S. EDM is fundamentally flawed. Mexico's Exhibit MEX-29 provides a schematic of the structure of the U.S. model. The U.S. analysis assumes that all cattle in the United States are identical, so that the same costs of the COOL measure are incurred as products move through the supply chain regardless of the country of origin. The model ignores costs from segregating livestock and meat according to the country of origin which have been recognized by the panel in earlier rulings.

40. For the correct application of the labels at retail, cattle and meat must be segregated according to their origin. A correct structure for an EDM requires taking into account that cattle of different origins be kept separated and with different costs of the COOL measure according to the cattle's country of origin. An illustration of such a structure is provided on page 4 of Exhibit MEX-29.

30. Moreover, the United States bases its calculation on export prices and volumes that are suppressed by the COOL measure. A correct calculation of impairment is one where the baseline is the situation where the COOL measure has not yet been implemented and then the COOL measure is introduced. Mexico's methodology follows this correct approach.

41. Instead of using the available data to directly estimate the impact of the COOL measure on the export of Mexican feeder cattle to the United States, the United States proposed a fictional world that is examined within an EDM and proposes to use this fictional world for the calculation of nullification and impairment. The modeling assumptions in the EDM presented by the United States assume that there has been no denial of equal competitive opportunities for Mexican cattle, which conflicts with the findings of the Panel and the Appellate Body.

42. Specifically, a complex EDM such as the one proposed by the United States relies on a large number of assumptions that result in a poor approximation of the causal effects of policy changes. In particular, the United States' EDM ignores the specifics of the segregation technology utilized by firms to comply with the COOL measure and ignores corner solutions, while assuming there is perfect competition in the US livestock industry. These modeling flaws cause the United States' EDM to grossly underestimate the impacts of the COOL measure. The United States' EDM oversimplifies market conditions and is inconsistent with market realities with respect to the path that the U.S. livestock industry has taken to comply with the COOL measure.

43. An EDM cannot be an appropriate substitute for econometric analysis to evaluate the impact of policy changes *ex post*. Actual changes in market prices and quantities reveal the true impact of policy changes given existing market realities. Unlike a supply chain model such as the one offered by the United States, econometric analysis does not rely on assumptions about market structure and model calibration and instead allows the data itself to reveal impacts on prices and quantities. Data to evaluate the market impacts of the COOL measure, as demonstrated in Mexico's Methodology Paper, are readily available and can be used to estimate the causal impacts of the COOL measures.

44. Even if one were to accept that an EDM is appropriate to apply in these circumstances (*ex post*), there are a number of specific problems with the United States' EDM. Tonsor et al. (2015) made a proper use of an EDM in their *ex ante* analysis of the costs of the COOL measure.[5] This is the type of analysis that is typically performed using EDMs, unlike the United States *ex post* analysis. The EDM of Tonsor et al. (2015) does not specifically consider imports but does account for the segregation costs as described in the report prepared by Informa Economics on the impact of the COOL measure by using the weighted average of the costs associated with the COOL measures for firms that source animals from a single origin and firms that source animals from multiple origins.

45. The United States' EDM is inconsistent with the fact that processing plants accepting imported animals pass the cost of the COOL measure onto the price they pay for animals that were previously imported as feeder cattle. The Panel in the underlying proceedings made findings on this issue:

> In fact, there is direct evidence of major slaughterhouses applying a considerable COOL discount of USD 40-60 per head for imported livestock. This proves that major processors are passing on at least some of the additional costs of the COOL measure upstream to suppliers of imported livestock. We have no evidence of a similar discount being applied to suppliers of domestic livestock, nor has the United States responded to the evidence submitted by Canada and Mexico in this respect.[6]

46. Also in the original proceedings, the Panel undertook a detailed examination of the impact of the COOL measure on imported livestock, and found that competitive opportunities were reduced in at least sixteen significant ways, namely:

a) a considerable COOL discount being applied by several major processors to imported livestock and the absence of a similar discount being applied to domestic livestock,

b) plants and companies simply refusing to process any imported livestock,

c) fewer processing plants accepting imported livestock,

d) certain suppliers having to transport imported livestock longer distances,

e) plants processing imported livestock at specific limited times, namely on specific days of the week or only after specific hours of the day,

f) additional logistical problems and additional costs for certain imported livestock suppliers,

g) due to congestion resulting from limited specific-time deliveries, certain imported livestock suppliers faced increased difficulty in obtaining delivery trucks or using trucks in the most efficient way,

h) transportation delays for certain suppliers of imported livestock,

i) increased transportation costs for certain suppliers of imported livestock,

[5] Appendix 15 to Exhibit MEX-2.

[6] Panel Reports, *US – COOL*, para. 7.356. See also Panel Reports, *US – COOL (Article 21.5 – Canada and Mexico)*, paras. 7.170 and 7.176.

j) less efficient transportation for certain suppliers of imported livestock because of fewer deliveries due to the longer distance and less turn-around time,

k) changes to contractual terms for suppliers of imported livestock to incorporate a COOL opt-out clause to allow processors to unilaterally terminate or amend their contracts with suppliers of imported livestock,

l) cancellation, termination or non-renewal of supply contracts for imported livestock,

m) replacement of long-term contracts with spot contracts at lower purchase prices,

n) 14 days advance notice being required for suppliers of Mexican cattle at various U.S. processing facilities,

o) certain suppliers of domestic livestock suffered significant financial disadvantages due to price discounts for imported livestock as a result of the COOL Measure, and also due to the refusal of financial institutions to provide credits and loans to Canadian livestock producers because of the risks resulting from the COOL Measure, and

p) exclusion of imported cattle from premium beef programs which are particularly profitable for livestock suppliers.[7]

47. In addition, the Informa Study clearly describes that firms that handle single origin animals/meat incur substantially smaller costs of compliance with COOL than firms that deal with animal/meat from multiple origins. The United States' EDM is therefore inconsistent with the actual cost structure and impact of the COOL measure.

48. Moreover, equations (18) to (23) of the United States' EDM in Exhibit US-3 are based on an implausible assumption that removal of the COOL measure will have the same impact on the prices of imported livestock as on the prices of U.S. livestock of the same weight categories. This is inconsistent with the pattern of discrimination found to exist under the COOL measure. Under the COOL measure, animals of different origins are imperfect substitutes. The COOL measure requires that feeder cattle imported from Mexico be differentiated from U.S. born cattle at later stages of the supply chain, so that the meat from these animals can be correctly labeled according to their origins as specified by the COOL measure. The requirement to differentiate animals according to their origins impose additional costs that can be averted by using animals of a single origin, which is precisely why the COOL measure has a differential impact in the price of imported Mexican cattle. Equations (18) to (23) simply assume away this reality.

49. The United States' EDM is set up in such a manner that the results regarding livestock prices are given by what the United States calls the "import wedge." For instance, in tab 16 (Complete Results) of Exhibit US-3, the change in the imported Mexican feeder cattle price in the United States is USD 12.63 while the change in the Imported Mexican feeder calf price in Mexico is USD 14.88. The difference between these two values is USD 2.25, which is the value of what the United States calls the "import wedge" for "farrowing and cow calf calves from Mexico" in tab 13 (COOL costs) in Exhibit US-3. This feature of the EDM is inconsistent with the fundamental economic theory that the costs of a policy program are distributed through the whole supply chain. It is also inconsistent with established facts that all the cost of the COOL measure for the entire supply chain are passed onto the price of imported animals, not just the cost of the COOL measure associated with the imported animals. Moreover, it is inconsistent with the evidence established during the proceedings that, even before the implementation of the amended COOL measure, processors were imposing a much higher "COOL discount" of up to USD 40 to 60 per head. Indeed, the Panel in the original proceedings observed that "[i]n the absence of a large share of US consumers willing to pay a price premium for country of origin labelling, the cheapest way to comply with the COOL measure is to process only US-origin livestock, all other things being equal", that the "other possibility is to continue processing imported livestock through segregation, which

[7] Panel Reports, *US – COOL*, paras. 7.373-7.381.

entails additional costs in virtually all cases" and that "[e]ither process configuration is likely to cause a decrease in the volume and price of imported livestock".[8]

50. Another problem with the United States' EDM is that the set of elasticities utilized are inappropriate to measure the full impacts of withdrawing the COOL measure. Incorrect elasticities values contribute to a severe underestimation of the impacts of the COOL measure on imported feeder cattle from Mexico. The United States uses elasticities from previously published works, but those studies had a very different objective than measuring nullification or impairment and a different length of run. In some cases, the United States uses elasticities for a completely different product. The United States' model uses some of the elasticities reported in Tonsor, et al. (2015) to derive short-run estimates (one-year). But complete removal of the COOL measure would require a period of adjustment that exceeds one year. The inappropriate length of run of the United States' model causes underestimation of the market impacts of the COOL measure.

51. Moreover, the United States' EDM uses the same elasticity of supply for U.S. fed and U.S. feeder cattle. There is no economic rationale for this assumption and this is not supported by the work of Tonsor et al. (2015).

52. The United States set the export supply elasticity of Mexican feeder cattle at 1.83 to equal the supply elasticity for U.S. imports of wholesale meat. However, there is no economic rationale to set the export supply elasticity of feeder cattle to be the same as for wholesale meat. The Mexican feeder cattle export supply elasticity depends on the Mexican domestic demand and supply elasticities and the export share. There is no economic rationale for the export supply elasticity of feeder cattle to equal the export supply elasticity of meat. The supply and demand conditions for these two products are significantly different.

53. In its EDM in Exhibit US-3, the United States uses cost estimates from the Regulatory Impact Analysis (RIA) prepared by the Agricultural Marketing Service of the U.S. Department of Agriculture, which were prepared in connection with the 2009 and 2013 versions of the COOL regulations (Exhibit US-1 and Exhibit US-2). The RIA is a costs and benefits analysis that is concerned with regulatory impacts on the United States' economy. The 2009 and the 2013 RIA therefore mainly focus on labelling and completely ignore segregation costs that are the source of the differential treatment of imported livestock. The United States accordingly ignores in its model a significant source of costs, which leads to severe underestimation of the amount of nullification and impairment. As an alternative, the United States could have used the Informa Study as an objective and unbiased source of information about the costs of the COOL measure. The estimated costs in the Informa Study are substantially higher than those in the RIA, in particular for firms that source livestock from more than one country of origin. The EDM presented by the United States fails to account for the cost of segregation and segmentation described in the Informa Study.

54. The United States' EDM also includes an adjustment for the United States' assertion that costs should be reduced to account for the exemptions from the COOL measure, such as for processed products. But the Panel in the underlying proceedings found that the burdens of the COOL measure were imposed on all imports of Mexican cattle, because at the time of importation the purchasers do not know their ultimate use. The United States pursued this argument with the Appellate Body and it was rejected. Accordingly, there is no justifiable basis for including such an adjustment in the United States' model.

Impact on Mexican Domestic Market Prices

55. Mexico's Methodology Paper established that the COOL measure's impact on Mexico's exports of cattle has had effects not only on Mexican exports, but also on sales of cattle in Mexico's domestic market. The impact of the domestic price suppression is calculated to be USD 198 million. Like the export price and volume effects, this domestic price suppression effect is directly related to the nullification or impairment at issue. In simple terms, the relevant benefit accruing to Mexico is the right of not having to face a measure like the COOL measure. By virtue of the nullification or impairment of this benefit by the COOL measure, Mexican domestic prices have been suppressed. It would fundamentally undermine the balance of concessions in the WTO Agreements if the full extent of the benefits accruing to WTO Members were not recognized in this

[8] Panel Reports, *US – COOL*, para. 7.506.

arbitration. The COOL measure has disrupted the previously integrated North American cattle market. The price suppression in the Mexican market is a direct result of this disruption. In legal terms, the price suppression is the direct effect of the nullification or impairment of the benefits accruing to Mexico under the WTO Agreements.

56. The United States argues that, as a matter of law, the harmful economic effects of price suppression in the Mexican domestic market for cattle cannot be considered at all. It claims that prior arbitrators have found that they must only consider trade flows, and seeks to characterize Mexico's quantification of the harm from domestic price suppression as "some broader, subjective measure of the overall economic impacts supposedly related to non-compliance."[9] But Mexico has not claimed that it should be compensated for general effects in its domestic economy; rather, it has shown the causal effects of the COOL measure specifically on the Mexican cattle industry. Moreover, the covered agreements contemplate that nullification and impairment can have indirect effects, and prior arbitrators have not excluded the possibility that effects in domestic markets can be taken into account. These points are explained in detail below.

57. In evaluating claims for economic harm, arbitrators in prior disputes have focused on whether there was a sufficient "causal link" between the measure at issue and the alleged harm, such as in in *EC – Hormones (US) (Article 22.6 – EC)*. The requirement of a causal link between benefits being nullified and impaired and the measure at issue derives from the language of GATT Article XXIII:1, which establishes that a nullification or impairment must arise "as the result of … the failure of another contracting party to carry out its obligations".

58. The concept of "causal link" has been discussed in cases arising under other agreements. For example, in *US –Steel Safeguards*, the Appellate Body, in the context of examining the term "as a result of" in Article XIX:1(a), found that there is a need to establish a causal link between increased imports and unforeseen developments when imposing a safeguard measure:

> Turning to the term "as a result of" that is also found in Article XIX:1(a), we note that the ordinary meaning of "result" is, as defined in the dictionary, "an effect, issue, or outcome *from* some action, process or design". The increased imports to which this provision refers must therefore be an "effect, or outcome" of the "unforeseen developments". Put differently, the "unforeseen developments" must "result" in increased imports of the product ("such product") that is subject to a safeguard measure.[10]

59. Similarly, in *US – Wheat Gluten*, the Appellate Body stated:

> The word "causal" means "relating to a cause or causes" while the word "cause", in turn, denotes a relationship between, at least, two elements, whereby the first element has, in some way, "brought about", "produced" or induced" the existence of the second element. The word "link" indicates simply that increased imports have played a part in, or contributed to, bringing about serious injury so that there is a causal "connection" or "nexus" between these two elements.[11]

60. This case does not involve a situation in which economic harm is based on speculation and/or is not capable of quantification. Mexico has demonstrated an extremely close causal link between the COOL measure and price suppression in the Mexican domestic market. In particular, it is undisputed that the Mexican and U.S. markets for cattle are tightly integrated. The Mexican cow-calf industry was structured over one hundred years ago to supply the U.S. market. There are no export markets for Mexican cattle other than the United States. Mexico's methodology takes into account the loss of exports caused by the COOL measure, to avoid double-counting.

61. The only criticism the United States makes of the methodology is to state, vaguely, that "Mexico does not account for other factors impacting its domestic sale of livestock that are completely unrelated to the impact of the amended COOL measure on export volumes. For instance, Mexico does not account for the drought's impact on the quality or life span of Mexican

[9] United States' written submission, para. 120.
[10] Appellate Body Report, *US –Steel Safeguards*, para. 315.
[11] Appellate Body Report, *US – Wheat Gluten*, para. 67.

cattle."[12] To the contrary, Mexico's methodology isolates the impact of the COOL measure, and measures the impact in terms of lowered prices in the Mexican market.

62. The calculation of the price suppression in the Mexican domestic cattle market builds on the estimate of the impact of the COOL measure on the price of Mexican feeder cattle exported to the United States. The U.S. and Mexican cattle industries are highly integrated and it is a natural outcome of economic forces that a shock on the price of Mexican feeder cattle exported to the United States to be transferred onto prices in the domestic Mexican cattle market. The approach in Mexico's Methodology Paper is to estimate a price transmission regression to measure price linkage between the U.S. feeder cattle market and the Mexican feeder cattle market. It is found that in the long run, $0.678/lb of a $1/lb increase in the price of feeder cattle exported to the United States is transmitted to the Mexican domestic price of feeder cattle. Thus, given that the COOL measure depressed exported feeder cattle price by $0.187/lb, the corresponding price suppression to the Mexican domestic price is -$0.127/lb. Applying the price suppression to the Mexican domestic feeder cattle market yields a total prices suppression loss to Mexico of $198,628,204.

63. The calculations of the price suppression loss to Mexico focus on the feeder cattle market. The losses however certainly extend to the whole Mexican domestic cattle market. On a per pound basis, the losses to other cattle categories are smaller and more difficult to measure. However, applied to the whole Mexican cattle industry, these losses are certainly substantial. Hence, the calculations offered by Mexico, which focus on the feeder cattle market, should be understood as a lower bound of the total damage caused to the Mexican cattle industry by the COOL measure.

64. In Mexico's view, the price suppression in the Mexican market is a direct effect of the COOL measure. However, to the extent it might not be direct, it would fundamentally undermine the balance of concessions in the WTO Agreements if the full extent of the benefits accruing to WTO Members were not recognized in this arbitration. Thus, when examining the nullification or impairment of benefits under the provisions of all of the WTO Agreements including under Article 22 of the DSU, it is essential to interpret those benefits broadly so that they include obvious direct benefits but also benefits that are less direct but are nonetheless real. In this instance, the price suppression in the Mexican market is undoubtedly real and the benefits accruing to Mexico under the WTO Agreements should have prevented this price suppression from occurring but have not because they have been nullified or impaired.

65. For both violations of the TBT Agreement and the GATT 1994, a Member may bring a dispute if it considers "any benefit" accruing to it "directly or indirectly" is being nullified or impaired "as the result of" a violation by another Member of its WTO obligations. The "nullification or impairment" referred to in DSU Article 22.4 is the nullification or impairment of "benefits" accruing to a member in the sense of GATT Article XXIII:1. In other words, the benefits may be direct or indirect benefits.

66. The United States nonetheless argues that the Arbitrator may only consider "trade flows," claiming that arbitrators in past cases have found that the level of nullification and impairment must be based exclusively on the impact on trade flows. It cites to the *EC – Hormones*, *US – Gambling*, and *EC – Bananas* cases in support of this claim. However, the United States is wrong to suggest that the arbitrators in prior disputes have found that the effects of measures on domestic markets are excluded from consideration. For example, the arbitrator in *US – Byrd Amendment* stated:

> We do not agree with the United States that nullification or impairment is to be limited in all instances to the direct trade loss resulting from the violation. We agree with the Requesting Parties that the term "trade effect" is found neither in Article XXIII of GATT 1994, nor in Article 22 of the DSU. Previous arbitrators' decisions based on direct trade impact are not binding precedents.[13]

67. The arbitrator in that case further commented that "[t]he use of direct trade effect in most cases reflects the fact that trade loss is generally more directly identifiable and quantifiable and

[12] United States' written submission, para. 129.
[13] Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (EC) (Article 22.6 – US)*, para. 3.70.

that, in such a context, arbitrators preferred to rely on verifiable figures",[14] and also stated that "… the 'trade effect' approach has been regularly applied in other Article 22.6 arbitrations and seems to be generally accepted by Members as *a* correct application of Article 22 of the DSU" (emphasis original).[15] In other words, it is not the only correct application of Article 22.

68. The United States also cites to *EC – Bananas (US) (Article 22.6 – EC).* In that case*,* the United States included a claim for economic harm arising from lost exports to third countries of inputs, such as fertilizer, for the third countries' production of bananas. The arbitrator rejected this claim, stating "[t]o the extent the US assessment of nullification or impairment includes *lost US exports* defined as *US content incorporated in Latin American bananas* (e.g. US fertilizer, pesticides and machinery shipped to Latin America and US capital or management services used in banana cultivation), we do not consider such *lost US exports* for calculating nullification or impairment in the present arbitration proceeding between the European Communities and the United States".[16] (emphasis original)

69. In this regard, the key point for the Panel was its view that the third countries could make their own claims for nullification or impairment based on effects on their own exports of bananas to the EU, and that it was inappropriate for the United States to make, in effect, a claim of harm based on the harm to those other countries' exports. Mexico is not claiming harm from loss of exports to third countries. Furthermore, third countries could not make claims for nullification or impairment based on the price suppression effects caused by the COOL measure on Mexican cattle in the Mexican domestic market. Thus, the arbitrator's findings in *EC – Bananas* do not support the United States' argument that indirect effects can never be considered.

70. In *US – Gambling*, Antigua argued that losses to the Antiguan remote gambling industry led to additional losses in other sectors of the economy, including lower income and government revenues. It characterized these as indirect effects that should be taken into account in addition to direct trade effects. To compensate for those effects, it proposed to apply a "multiplier" to its calculation of the trade effects to arrive at an approximation of the indirect effects. The arbitrator rejected the multiplier, finding that "the use of a multiplier reflecting the aggregate change in output for a unit change in demand would be contrary to some of Antigua's other arguments concerning the limited impact of remote gambling revenues on GDP."[17] Unlike Antigua in the *US – Gambling* case, Mexico has not made a claim of harm from negative effects to its general economy but rather has identified concrete effects on the Mexican cattle industry arising from the COOL measure. Mexico has not made other arguments that are contrary to its position.

71. In the *EC – Hormones (Canada) (Article 22.6 – EC)* determination cited by the United States, Canada did not propose to include any economic harm except that to trade flows, so it is unclear why the United States believes that determination is a relevant precedent. In *EC – Hormones (United States) (Article 22.6 – EC)*, the arbitrator rejected a U.S. effort to include an estimated amount for additional exports of edible beef offal that would have been made as a result of U.S. marketing and promotional efforts that would have taken place but for the hormone ban. In other words, there had been no such marketing efforts. The arbitrator declined to take those projected exports into account on the basis that they were too speculative. The effects on the Mexican domestic market for cattle, in contrast, are not speculative; they are quantifiable and have a close causal connection to the COOL measure.

72. The United States cites to a recent proposal to amend the DSU as evidence that the DSU currently prohibits the inclusion of domestic price suppression. The proposal, contained in TN/DS/26, is to amend the DSU to expressly allow the level of nullification and impairment to include an estimate of the effect of the inconsistent measure on a country's economy as a whole. Mexico has not proposed to include in the level of nullification and impairment the impact of the COOL measure on Mexico's economy as a whole; rather, Mexico has included the effects of the inconsistent measure on the Mexican market for cattle – effects that have a close causal link to the U.S. measure. Accordingly, TN/DS/26 is not relevant to this dispute.

[14] Decision by the Arbitrator, *US – Offset Act (Byrd Amendment) (EC) (Article 22.6 – US)*, para. 3.39.
[15] Ibid., para. 3.71.
[16] Decision by the Arbitrator, *EC – Bananas III (US) (Article 22.6 – EC),* para. 6.12.
[17] Decision by the Arbitrator, *US – Gambling (Article 22.6)*, para. 3.123.

73. The United States also puts forth an argument that there is a requirement to evaluate the effect of Mexico's proposed suspension of benefits on the U.S. economy as a whole, claiming that "[t]he corresponding level of suspension would need to be decreased by an appropriate calculation of the broader economic effects on the U.S. economy of the suspended trade."[18] The United States cites no provision of the covered agreements or any prior arbitration ruling in support of this argument, because there is none. The level of nullification and impairment is not measured in terms of its impact on the country that maintains the inconsistent measure. The appropriate measure is the value of the denial of benefits, direct and indirect, to the complaining member.

[18] United States' written submission, para. 127.

ANNEX B-3

EXECUTIVE SUMMARY OF THE ARGUMENTS OF THE UNITED STATES

I. INTRODUCTION

1. Both Canada and Mexico calculate the level of nullification or impairment as the sum of "export revenue losses" and domestic "price suppression losses." In the first instance, these estimates dwarf the historical and current export value of livestock and in no way reflect the "benefit" impaired by the amended COOL measure. Specifically, Canada and Mexico are arguing that if the amended COOL measure were withdrawn, their exports of livestock would increase 92 percent and 70 percent, by value respectively, to never before seen levels, and even as overall demand for beef and pork muscle cuts in the United States has been in decline since 2008 – with no sign of rebound. In the second, the claimed "price suppression losses" are not part of the level of nullification or impairment of benefits accruing under the *Agreement on Technical Barriers to Trade* ("TBT Agreement") or the *General Agreement on Tariffs and Trade 1994* ("GATT 1994").

2. In response, the United States explains why the econometric calculations of the requesting parties produce highly inflated levels of nullification and impairment. In contrast to the flawed methodologies proffered by Canada and Mexico, the United States puts forward a type of partial equilibrium model, which more accurately estimates the trade effects of the COOL measure, as amended, in the context of the complex North American market. Specifically, an equilibrium displacement model ("EDM") is the most suitable tool for estimating the trade effects of the amended COOL measure. And finally, the United States has explained why the requesting parties' claims for non-trade related damages cannot succeed.

II. APPROPRIATE CALCULATION OF THE LEVEL OF NULLIFICATION OR IMPAIRMENT

3. Pursuant to Article 22.6 of the *Understanding on Rules and Procedures Governing the Settlement of Disputes* ("DSU"), the United States objected to Canada and Mexico's proposed levels of suspension of concessions or other obligations because each party has submitted a proposed level of suspension that is far in excess of the level of nullification or impairment attributable to the measure at issue. Article 22.4 of the DSU is explicit and requires that the "level of suspension of concessions or other obligations authorized by the DSB shall be equivalent to the level of nullification or impairment." The requesting parties' calculations suffer from conceptual flaws and methodological errors that result in grossly inflated estimates of the levels of nullification or impairment.

4. In this proceeding, Canada and Mexico have each gone far beyond an "equivalent" level of nullification in offering a two-part asserted level of nullification or impairment, which in the first instance exceeds all possible trade effects, and which in the second instance is not attributable to the nullified or impaired benefit. As to the former, Canada and Mexico attempt to quantify the "export revenue losses" attributable to the amended COOL measure, *i.e.*, the volume and value of livestock that would have been exported "but for" the amended COOL measure. The methodologies employed to estimate the quantity and value effects of the amended COOL measure are fundamentally flawed and result in requests for levels of suspension of concessions that are unsupportable. As to the latter, Canada and Mexico argue that domestic "price suppression losses" should also be included in the total level of nullification or impairment. Even if this "loss" level was determined through a clear and rational methodology, which it is not, the alleged effects on domestic price are not trade effects and do not relate to the "benefits" accruing under the relevant covered agreements (the TBT Agreement and the GATT 1994) that are being nullified or impaired.

5. The DSU does not prescribe any particular way to demonstrate that the level of suspension requested by each party is excessive in light of the requirements of the DSU. The United States has established its *prima facie* case in three different, and independent, ways. First, the United States has provided a methodology – the EDM – that more accurately estimates the level of nullification and impairment than the one proposed by the requesting parties. Second, the United States has explained why, even aside from the EDM approach, the somewhat differing econometric

calculations of the requesting parties produce highly inflated levels of nullification and impairment. Third, the United States has explained why the requesting parties' claims for non-trade related damages – *i.e.*, their claims regarding domestic "price suppression losses" – are legally invalid.

A. Applied Economic Analysis Is Necessary to Accurately State the Level of Nullification or Impairment in the North American Livestock Industry

6. To calculate the amount of nullification or impairment, one must compare on a prospective basis the imports of the relevant livestock from Canada and Mexico under the amended COOL measure to the imports that would occur were the amended COOL measure withdrawn. And to make that comparison, one would look at the actual relevant U.S. livestock imports during the most recent period (actual situation), and then estimate the relevant imports of livestock that would exist during the same period if the amended COOL measure were withdrawn and all other factors were held constant (the counterfactual).

7. Recognizing these challenges, and the complexity of the North American livestock markets, the United States uses a type of partial equilibrium model, an EDM, to estimate the prospective trade effects of coming into compliance with the DSB recommendations and rulings through withdrawal of the amended COOL measure. This model compares a baseline of 2014 trade data to what would happen to supply and demand across all three countries if the amended COOL measure were withdrawn.

1. Overview of the Equilibrium Displacement Model

8. EDMs are a well-accepted and widely used type of partial equilibrium model used for applied economic analysis, particularly in the agricultural sector. In particular, EDMs are well accepted by economists, and have been widely used in the economic literature to model and measure the impact of policy changes in the agricultural sector. In the context of COOL, the United States notes that there have been at least three significant studies of the U.S. livestock market using EDMs.

9. Further, prior arbitrators in Article 22.6 proceedings have in the past relied on partial equilibrium or stimulation models similar to the EDM proposed by the United States. In this regard, the United States notes that the arbitrator in *US – CDSOA (Article 22.6 – US)* considered that where "evaluating the trade effects of the scheme cannot be accomplished with mathematical precision," "economic science allows for the consideration of a range of possible trade effects with a certain degree of confidence." That is, the use of well-supported and reasoned economic models that recognize the varying effects of a measure, as the EDM does, has been an important tool for arbitrators.

2. Explanation of the Equilibrium Displacement Model for the U.S. Cattle/Beef and Hog/Pork Sectors

10. The United States uses an EDM in order to estimate the difference between the value of trade flows in 2014 and a counterfactual situation where compliance with the DSB recommendations and rulings is achieved. The EDM is a series of linearized equations that provide economic estimates of the trade shifts that would occur if the amended COOL measure were withdrawn.

11. The EDM utilizes a multi-animal (covering cattle/beef and hogs/pork), and multi-sector (representing five levels of the beef and pork marketing chain), structure. For each species and at each level, the model establishes baseline quantities and prices, and then estimates the price and quantity changes due to an external "shock."

12. In this case, the shock is the immediate elimination of the amended COOL measure and its associated compliance costs, which appear in the first four marketing levels. All other independent variables are held constant at their 2014 levels. In this context, the resulting quantities and prices are endogenous variables, meaning they are determined within the EDM by a set of exogenous and computed components. Exogenous components include the baseline quantity and prices, demand and supply elasticities, and COOL compliance costs.

3. 2014 Baseline Quantities and Prices

13. The EDM's baseline utilizes 2014 market quantities and prices sourced from the U.S. Census Bureau trade data. The most recent full year data reflects all current market conditions such as transport costs, feed costs, exchange rates, ownership structures, Canadian and Mexican domestic policies, and environmental factors as they existed in 2014. The year 2014 thus provides the most appropriate baseline for the purposes of determining the nullification or impairment of benefits accruing to Mexico and Canada under the TBT Agreement and the GATT 1994 on a prospective basis.

14. Construction of the 2014 baseline, as well as the EDM, depends on certain additional assumptions. The EDM assumes that all marketing levels are in perfect competition. The EDM utilizes "fixed proportions" between inputs and outputs through the marketing channel. The EDM also assumes that technologies used in the "value-added" sectors provide a constant return to scale. The EDM further uses certain "conversion factors" to translate animal standard-sized livestock from the number of head of livestock into the retail weight in pounds. Finally, the conversion factors and the EDM, more generally, are based on an assumption that fed cattle are 1,400 lbs. and fed hogs are 300 lbs.

4. Multi-Animal, Multi-Marketing Sector Model Structure

15. To accurately estimate the trade effects of the amended COOL measure at each level of the marketing chain from farm to consumer, the EDM explicitly models the five distinct levels of the livestock market: (1) cow-calf and farrowing, (2) finishing, (3) packing/wholesale, (4) retail, and (5) consumers. To model the complete and integrated livestock-to-retail meat market, this model also incorporates imported livestock from Mexico and Canada, as well as imports and exports of pork and beef. The model therefore captures the elements of supply and demand relevant to the livestock/meat market in North America.

16. The EDM uses four sets of equations, "identity," "price," "value-added," and "structural," to define the market and analyze shifts resulting from withdrawal of the amended COOL measure. These equations are based on the assumption that equilibrium conditions exist at each stage of production.

5. Explanation of Elasticities and COOL Compliance Costs

17. There are two primary input parameter values utilized by the EDM: elasticities and COOL compliance costs.

a. Elasticities

18. The EDM's structural supply and demand equations are linearized and use the elasticities, consistent with previous COOL EDM studies, to determine the responsiveness of prices and quantities in the model to exogenous shocks. As discussed in academic literature and noted in Mexico's Methodology Paper, data and time constraints render impractical estimating all supply and demand elasticities econometrically. Therefore, the EDM follows the same approach as other EDM studies and uses supply and demand elasticity estimates established in and vetted by peer-reviewed academic literature.

19. The EDM utilizes short-run supply elasticities for the supply of U.S. feeder animals and the supply of imports of feeder animals, slaughter animals, and wholesale meat drawn from academic sources. In this context, short-run is typically defined as one to two years, while long run is typically defined as ten years. The EDM also utilizes demand elasticities for U.S. retail meat (own-price and cross-price elasticities) and U.S. wholesale meat exports.

20. Previous academic studies of the North American livestock market do not provide supply elasticities for U.S. imports of feeder or slaughter animals. The United States has thus set these elasticities to equal the supply elasticity for U.S. imports of wholesale meat imports. This is consistent with the expectation that the import supply elasticities for these animals would be higher than those for domestic supplies, and is supported by other studies that developed lower estimates for these parameters. Canada claims, however, that these elasticities are inappropriate

because the ratio of export supply to total supply is important, and the (alleged) long-run must be calculated on an *annual* basis (and purports to do so for 2014). Canada provides no clear methodology or data to support its extreme export supply elasticities (which range from 12.6 to 126.3), which are much higher than those developed by academics specifically considering the underlying markets.

b. COOL Compliance Costs

i. RIA Cost Estimates

21. To estimate the trade effects of withdrawing the amended COOL measure, the costs of COOL compliance are estimated and removed from the EDM at each level of the beef and pork production chain. The COOL cost estimates in the EDM are based on the Regulatory Impact Analyses ("RIAs") conducted by the U.S. Department of Agriculture ("USDA") with respect to the 2009 and 2013 COOL final rules. The United States has also put forward an alternative based on the Informa Economics report costs which form the far upward bound of likely costs.

22. Although the RIA costs assume that exclusively U.S.-origin meat and mixed origin meat are subject to the same incremental direct costs at the farm, finishing, packer and retail levels, differential impacts arise due to differing elasticities for import supply and domestic supply. The EDM captures and measures these differences by imposing appropriate import and domestic supply elasticities. That is, imported products are more sensitive to incremental cost increases and reflect these changes more severely in price and quantity changes. This difference reflects the differential compliance costs imposed on Canadian and Mexican livestock suppliers.

23. But for the compliance costs related to the 2009 and 2013 COOL measures, the value of Canadian and Mexican livestock exports to the United States would have exceeded the 2014 baseline level of exports. Specifically, Canadian feeder pig exports would be US$3.75 million higher than 2014 levels, and Canadian slaughter hogs would have been US$0.35 million higher. Canadian feeder calf exports would have been US$21.45 million higher and slaughter cattle would have been US$17.64 million higher. Mexican feeder calf exports would have been US$49.18 million higher than 2014 export levels.

ii. Informa Economics Cost Estimates

24. Recognizing that the original panel and compliance panels have found that some portion of U.S. costs may be shifted up the supply chain and imposed on importers, the United States has also put forward an alternative based on the Informa Economics report costs which form the far upward bound of likely costs. As the original panel noted, however, the "Informa Report is silent on its methodology and the sample considered (*i.e.*, time period, geographical zone, number of firms surveyed)," and thus is not "reliable and precise as regards its exact quantification of the costs of the COOL measure." These costs in fact represent an exaggeration of the compliance costs for mixed origin product, and the far upward bound of potential segregation and compliance costs.

25. Using this cost wedge and assuming that U.S. retailers and packers will push costs associated with mixed origin animals up the supply chain, the value of Canadian and Mexican livestock exports to the United States would have exceeded the 2014 baseline level of exports. Specifically, Canadian feeder pig exports would be US$62.30 million higher than 2014 levels, and Canadian slaughter hogs would have been US$5.10 million higher. Canadian feeder calf exports would have been US$34.30 million higher and slaughter cattle would have been US$27.01 million higher. Mexican feeder calf exports would have been US$78.95 million higher than 2014 export levels.

6. Conclusion

26. As demonstrated by the EDM, the more appropriate level of nullification or impairment is approximately US$43.22 million per year for Canada, and certainly no more than US$128.71 million per year. With respect to Mexico, the more appropriate level of nullification or impairment is approximately US$47.55 million per year, and certainly no more than US$78.95 million per

year. This analysis demonstrates that the levels of suspension of concessions requested by Canada and Mexico are in excess of the appropriate levels of nullification or impairment.

III. THE LEVELS OF SUSPENSION OF CONCESSIONS OR OTHER OBLIGATIONS PROPOSED BY CANADA AND MEXICO FAR EXCEED THE LEVELS OF NULLIFICATION OR IMPAIRMENT

27. The requesting parties utilize econometric methods that are fundamentally incapable of estimating the impact of the amended COOL measure in the complex North American livestock and meat market. Their "export revenue loss" calculations depend on unrealistic assumptions and suffer from serious methodological deficiencies that render their estimates incorrect. As noted consistently by previous arbitrators, the proposed level of nullification or impairment must reflect the "benefit" accruing under the relevant covered agreement allegedly nullified or impaired "as a result of" the breach found by the DSB. That is, the proposed level must be an accurate reflection of the trade that would have occurred "but for" the inconsistent amended COOL measure, and not a reflection of unrelated market drivers or circumstances.

A. Canada and Mexico's Proposed "Export Revenue Losses" Methodologies Are Fundamentally Flawed and Result in Overstatements of the Levels of Nullification or Impairment

28. The United States, Canada, and Mexico agree that the "trade effects" of an inconsistent measure are determined by evaluating the difference between a baseline annual export value and the estimation of what that export value would be if the amended COOL measure costs were eliminated. However, neither Canada nor Mexico's alleged level of nullification or impairment reflects the established patterns of supply and demand in North America or the realities of the livestock industry. Canada's total hog and cattle export value for 2014 was US$1.744 billion. Canada's estimated level of nullification or impairment, US$1.61 billion, suggests that export revenues would increase by 92.3 percent by value if the COOL measure was eliminated. Mexico's total feeder cattle export value for 2014 was US$737 million. Mexico's suggested level of nullification or impairment suggests that marginal revenue will increase by as much as 70 percent by value.

1. Econometric Modeling Is Not Well Suited to Accurately Determining Trade Effects

29. Canada's Methodology Paper attempts to use linear regression analysis to econometrically estimate the "reduction in the average weekly exports from Canada to the United States caused by the amended COOL measure," and the "price basis." Mexico's Methodology Paper seeks to determine "price basis" through econometric analysis, but abandons this methodology when determining the impact of the amended COOL measure with respect to exports.

30. Econometric modeling analysis seeks to estimate the statistical relationship between a variable of interest (the dependent variable) and other explanatory variables (the independent variables) as a tool for forecasting how changes to those independent variables would impact the dependent variable. Econometric modeling, however, is not an appropriate approach for determining the level of nullification or impairment. For example, it is widely understood that econometric models are dependent on the inclusion and accurate estimation of exogenous variables, are limited by the ability to incorporate accurate real world data, and must ensure that the relationship between the variables and data is accurately identified. Failure to address these issues will lead the model to attribute to the amended COOL measure trade effects that are due to some other factor. The concept of "non-attribution" is one that is familiar under the covered agreements and was addressed by the recent *China – GOES* compliance panel. These concerns make econometric models poorly suited for analyzing complex markets, such as integrated and vertically linked animal and meat markets, which are subject to numerous and overlapping variables that may impact the dependent variables.

2. Canada and Mexico's Models Are Mis-specified Because the Models Omit Numerous Necessary Explanatory Variables

31. The reduced form econometric modeling proposed by Canada and Mexico is far too simplistic to accurately isolate and quantify the magnitude of any potential effects of the amended COOL measure. In particular, Canada and Mexico's limited analysis does not consider a number of important explanatory variables impacting the North American livestock and meat markets between 2005 and 2015. Failure to accurately control for relevant factors results in attributing to the amended COOL measure effects that are instead due to other factors. For this reason, Canada and Mexico's proposed levels of nullification or impairment far exceed the "benefit" being impaired.

32. To accurately isolate and assess the quantity and price impact of the amended COOL measure, the requesting parties' models should not choose to include or exclude explanatory variables based on the bias requesting parties assume the variable will create or on the assumption that the effect is small – as they have done in these arbitrations. Rather, all explanatory variables should be included in the analysis.

33. Specifically, the requesting parties must effectively control for numerous independent variables, which also had an impact on quantity and price during this period. These independent variables include, but are not limited to:

- Economic Fluctuations and Recession: Significant economic fluctuations affecting the price and quantity of livestock exports to the United States have occurred during the period used by Canada and Mexico. The global economic crisis resulted in a worldwide slowing of trade and an overall contraction of agricultural markets between 2007 and 2009. The recessions had different origins and impacted each of the three economies differently. The U.S. recession, which lasted between December 2007 and June 2009, was largely driven by domestic factors in the housing and banking sectors. Canada entered economic recession in December 2008, which is a full year after the United States. Mexico's recession lasted from October 2008 to March 2009.

  Despite addressing the most significant economic downturn in recent memory in other submissions and academic papers, Canada and Mexico provide no assessment of the recession's effect on export quantities or the price basis. Instead, Canada and Mexico attribute the total effect of the economic downturn to the amended COOL measure.

- Increased Feed Costs: Feed costs, as one of the single largest input into livestock production, play a significant role in determining price and trade flows. For instance, when the cost of feed is high, the profitability of feeding cattle declines, encouraging increased slaughter or export of animals. Between 2005 and the present, feed costs in North America have shifted for a number of reasons, including drought, biofuels policy, changing export demands, and shifting domestic demand. In fact, feed costs not only change throughout the period of the amended COOL measure, impacting the price and quantity of livestock shipped, but feed costs affect Canada, Mexico, and the United States differently and must be accounted for in econometric price and quantity equations to ensure that changes in feed costs over time are not incorrectly attributed to the estimated effects of the amended COOL measure.

- Shifting Transportation Costs: Transportation costs can significantly impact cattle trade between Canada and the United States, and Mexico and the United States. When transportation costs, which are linked to the price of fuel, are high the incentive to ship Canadian cattle to the United States diminishes. Therefore, U.S. packers will purchase fewer Canadian livestock and Mexican cattle, and the price of imported livestock will decline. This is particularly clear as Canada's own submission specifies differences in transportation costs between costs for Canadian and U.S. producers. Unless these costs are properly accounted for, there is no way through an econometric analysis to precisely isolate the effects of the amended COOL measure on the price basis.

- Lingering Effects of BSE and Other Animal Diseases: The discovery of bovine spongiform encephalopathy ("BSE") in Canada in 2003 has also had lingering effects

on the Canadian market. While Canada has attempted to account for the trade disruption between Canada and the United States, it has not addressed the impact of bans enacted by other trading partners on imports of live cattle, beef, and beef products. Conversely, Mexico continues to benefit from its increased market share in a number of Canada's prime export markets, which are periodically closed to Canadian exports due to BSE cases (reported as recently as February 2015).

- Shifting Livestock Processing: Both Canada and Mexico have functioning slaughter and processing sectors which provide meat for domestic consumption as well as export. The relative health of this sector and, in particular, shifts in production capacity have a significant impact on the domestic price of livestock and the competitive opportunities for Canadian/Mexican farmers and feedlot owners. This should be considered in any econometric analysis.

- Weather Patterns: Weather related disruptions, such as drought, can significantly impact export levels. For instance, between 2011 and 2014 a significant drought affected Mexico and the U.S. Southwest. Drought both encouraged exports from Mexico, and increased slaughter (and a decline in stocks) in the United States. Canada has not controlled for the impact of this drought or other weather conditions. Rather, Canada suggests that if this were included in the econometric model specification the COOL impact would be larger because the drought had increased demand for imports of Canadian cattle to be used for breeding stock rather than for slaughter. However, Canada misunderstands the impact of the drought in the context of the integrated market. As Mexico indicated, the drought and expectations regarding its length and cost encouraged Mexican farms to export to the United States more feeder animals at lower weights and lower prices. This increased supply from Mexico decreased demand for Canadian feeder animals, and this effect should not be attributed to the amended COOL measure.

- U.S. Holidays: Significant holidays are often preceded by an increase in demand for beef and pork. But in their Methodology Papers, Canada and Mexico fail to address the influence of these holidays on quantity impacts or price basis.

- Competing Imports: Canada does not appear to consider the impact of U.S. or Mexican production on the ability of Canada to export to the United States, and Mexico does not consider the impact of Canadian and U.S. production on Mexican exports. Canada suggests that the United States is so large that the presence of an additional significant supplier of feeder cattle is irrelevant. This is erroneous. Canada further suggests that imports on the southern border do not affect the prices or quantities imported on the northern border. This stands in contrast to Canada's statements regarding the single integrated market, and is also in error. Failure to include another significant market player will result in Canada attributing to the amended COOL measure the impact of factors related to the supply of Mexican feeder cattle and in Mexico attributing to the amended COOL measure impacts related to the supply of Canadian livestock.

34. Finally, a wide variety of factors influence the quantity of livestock crossing the border and the price at which the livestock is sold, and because Canada and Mexico are seeking to determine both price and quantity effects, it is important to ensure that both the price and quantity equations are correctly specified with all the variables affecting either term. These additional variables include sales variables (such as lot size, average animal weight, animal sex, homogenous lots, type of sales contract, and other characteristics that may differ between Canadian and U.S. sales), demand shifters (such as relative prices of substitutes including consumer income, consumer preference, demographics, health concerns, and seasonality), and supply shifters (such as changes in slaughter capacity in both Canada and Mexico, or decisions to export at feeder or fed levels).

3. Including Additional Variables Is Insufficient to Increase the Accuracy of Canada's Econometric Model

35. Even if Canada and/or Mexico attempted to include additional explanatory independent variables, the econometric modeling still would not provide accurate results. Rather than focus on

the actual price of livestock, Canada and Mexico both utilize equations specified in terms of "price basis." The flaw with this equation specification is that the estimation of trade effects should measure how much the amended COOL measure impacts or lowers Canadian and Mexican livestock prices. Thus, changes to the price basis, which reflects changes in both the U.S. price and Canada or Mexico export prices, is not appropriate because any widening basis captures both the decline in Canada or Mexico export prices and the increase in the U.S. price.

36. Canada states that estimating an equation "with the absolute price as the dependent variable" will be "biased and unreliable and yield no meaningful results that can be interpreted in the calculation of losses." Mexico suggests this approach is less efficient and will yield a less reliable estimate than a model specified with price basis as the dependent variable. However, the question before the Arbitrators is not whether the "price basis" widened or contracted due to the amended COOL measure, but rather what quantity of livestock would be exported and at what price but for the amended COOL measure. For these reasons, Canada and Mexico's econometric analysis and its resulting overestimation of the level of nullification or impairment should be rejected.

4. Canada and Mexico's Methodologies Utilize Truncated Equations that Have Little Explanatory Power

37. Canada and Mexico use faulty "reduced form equations" to estimate the impact on the quantity of Canadian livestock exports to the United States and on the price basis from the amended COOL measure. These equations do not adequately evaluate the complex livestock and meat industry or the relevant demand and supply shifters.

38. Requesting parties' "reduced form equations" do not provide quantity equations that factor in price, or price equations that factor in quantity. In particular, the price and quantity equations, which are mutually linked (and in fact determinative), should have the same exogenous variables. Specifically, in a system attempting to identify both price and quantity, two reduced form equations should be specified with price and quantity as the dependent variables on the left hand side of the equations. On the right hand side should be all the variables affecting the price and quantity in the livestock market. It is important for all variables affecting either price or quantity to appear in both equations, otherwise the relevant variables affecting price and quantity are being omitted in the reduced form resulting in bias. Indeed, Canada itself conceded at the hearing that its quantity equation should, but does not, control for all causal factors. However, Canada inconsistently – and inaccurately – does not make the same concession for its price equation.

5. Canada and Mexico Rely on Incomplete and Unsubstantiated Data

39. Canada relies on unofficial weekly cattle and hog import data derived from veterinary certificates collected by USDA's Animal and Plant Health Inspection Service ("APHIS"). This is not the appropriate data to use because APHIS's responsibility is to ensure that health certificates are in order, not to track import numbers for official purposes.

40. With respect to the pricing data provided for feeder pigs, Canada notes that "no consistent time series of price data amenable for statistical analysis is available for feeder pigs in Canada." Canada now seeks to rely on a limited, handpicked selection of transactions, which are completely unverifiable. Such evidence simply cannot satisfy Canada's burden in this regard.

41. Mexico utilizes weekly pricing data collected by USDA's Agricultural Marketing Service ("AMS"). This data reflects a limited sample of weekly Texas and New Mexico feeder cattle prices. The AMS price data provided is not necessarily consistently reflective of the types of feeder cattle that are imported from Mexico. Moreover, it is significantly different from both the U.S. Census data and Mexico's reported export value. The AMS reported prices reflect both the export price and value added in the United States. However, Article 22.6 arbitration focuses on the trade effect of the inconsistent measure. This means it must reflect the impact of the measure on the product as it crosses the border not any later added value.

6. Mexico's Quantity Impact Analysis Is Also Subject to Significant Flaws

42. With respect to evaluating the impact of the amended COOL measure on the quantity of livestock exports from Mexico to the United States, Mexico does not conduct an econometric analysis. Just one omitted variable – drought – in Mexico's opinion has undermined its ability to use econometric modeling to determine the quantity impact of the amended COOL measure. Mexico describes at length the difficulties associated with creating a variable to represent the economic impact of the drought. Shifts in producer expectations with respect to the length of the ongoing drought may affect the timing of sales, as well as expectations about whether input prices may be higher or less certain in the near future. Mexico notes that it is impossible to provide a variable that would represent these unknowable and unpredictable expectations. This alone was sufficient for Mexico to discredit the econometric analysis of the quantity impact of the amended COOL measure.

43. Instead, Mexico uses a simple elasticity calculation to estimate the quantity impact. The quantity equation is insufficient to account for the complexity of the feeder cattle market in Mexico and the United States, much less to account for linkages to demand for fed cattle and beef or to substitute products such as pork. Even though Mexico's estimation only applies to one category of livestock and level of production, Mexico's calculation should account for all factors influencing quantity outcomes.

44. Mexico's simple calculation has two inputs. The first is 100 percent of the price basis attributed to the amended COOL measure as determined using the price basis econometric equation. The United States has explained why attributing 100 percent of the change in the price basis estimated using this econometric technique to a change in prices received by Mexico (or Canada) for feeder cattle (or other animals) is incorrect and overstates the impact of the amended COOL measure.

45. The second input is Mexico's elasticity of export supply for feeder cattle to the United States. Elasticity is a measure of how responsive the market will be, in terms of quantity, to the changes in price. It appears that Mexico recognizes that a specific supply elasticity has not been previously estimated "because of confounding effects from the drought and the COOL measure." Mexico nevertheless attempts to develop its own elasticity. Mexico bases its estimated elasticity on a single year, 2012, a period of time most certainly affected by drought and other factors. It also appears to make unsupported assumptions about the rate of export, and ultimately with little explanation concludes that the export supply elasticity is 4. This elasticity exceeds the appropriate level.

46. Mexico inputs the price basis estimates derived from the econometric modeling into the calculation of export supply to determine the quantity impact. Using a derived elasticity coupled with an estimated price basis calculation does nothing more than compound Mexico's methodological errors and further distance Mexico's proposed level of nullification or impairment from the actual level of benefits nullified or impaired by the amended COOL measure. Furthermore, using the entire price basis estimate to determine the impact of the amended COOL measure on Mexican feeder prices overstates the trade effect.

7. Canada and Mexico's Price and Quantity Estimates Result in Unsupportable Levels of Nullification or Impairment

47. Finally, Canada and Mexico uses the inaccurately estimated quantity impact and price basis to derive an overall level of nullification or impairment for each livestock category. That is, Canada and Mexico essentially multiples the price basis it attributes to the amended COOL measure times the quantity impact it attributes to the amended COOL measure. However, Canada and Mexico's methodology erroneously attributes to the amended COOL measure the impact of a wide variety of other factors concurrently affecting the North American market. For this reason, the trade effect figures provided by Canada and Mexico are unsupported and do not accurately estimate the level of nullification and impairment resulting from the amended COOL measure.

B. The Level of Nullification and Impairment Should Reflect Only the Trade Effect of the Amended COOL Measure

48. Both Methodology Papers argue to include in the level of nullification or impairment of benefits accruing under a trade agreement estimated economic effects in Canada or Mexico's domestic market, referred to in the Papers as "price suppression losses." With respect to the "price suppression losses," the requesting parties allege that the amended COOL measure resulted in a surplus of animals in their respective domestic markets, which ultimately "suppress[ed] the domestic price of feeder cattle in Mexico," and "suppressed prices for livestock in Canada." There is, however, no basis under the DSU for considering domestic price suppression as a part of the level of nullification or impairment of benefits under the TBT Agreement or the GATT 1994.

49. First, the DSU establishes that nullification or impairment relates to the benefits accruing to a Member under the provisions of the covered agreements. For example, DSU Article 3.3 states that prompt settlement of situations in which "any benefits accruing to [a Member] … under the covered agreements are being impaired" is essential. Similarly, Article 10.4 speaks of whether a measure already the subject of a panel proceeding "nullifies or impairs benefits accruing to" a Member "under any covered agreement." In this dispute, Canada and Mexico's request to include in the level of the suspension of concessions authorized an amount equivalent to alleged price suppression losses is inconsistent with the DSU and goes beyond any possible nullification or impairment of Canada and Mexico's benefits under the TBT Agreement and the GATT 1994.

50. The request to include alleged domestic price suppression losses cannot be reconciled with the DSU. An analysis of the level of nullification or impairment must focus on the "benefit" under the *trade agreement* allegedly nullified or impaired "as a result of" the failure of the Member to fulfill its obligation – *i.e.*, as a result of the inconsistency found by the DSB. Here, a trade benefit under these agreements relates to international trade in livestock, not to domestic markets. Indeed, it is notable that neither Canada nor Mexico has, *until this very arbitration*, considered that the "benefits accruing" under the WTO Agreement meant anything other than *the trade* in livestock. Thus, in their GATT 1994 Article XXIII claims before the compliance panels, Canada and Mexico claimed that the "benefits accruing" relate to *the market access of the livestock exported* to the United States, a point that the compliance panels recognized.

51. Second, the specific DSU requirement is that the "level of suspension of concessions . . . shall be equivalent to the level of nullification and impairment." Even aside from the fact that the DSU does not provide for the alleged "price suppression losses" approach advocated by Canada and Mexico, any analysis of whether the level of suspension of concessions is equivalent to the level of nullification or impairment would need to account for the economic effects of the suspension of concessions in the United States. In other words, to the extent that the level of nullification or impairment is increased by alleged price suppression losses to reflect broader economic effects in Canada and Mexico of the amended COOL measure, then it would be necessary to include broader economic effects on both sides of the equation.

52. The corresponding level of suspension would need to be decreased by an appropriate calculation of the broader economic effects on the U.S. economy of the suspended trade. Otherwise, the arbitration would not be an apples-to-apples determination of equivalency, as required under the DSU.

53. Finally, and again aside from the fact that Canada's and Mexico's alleged price suppression losses are not part of the level of nullification or impairment, Canada's and Mexico's estimates of those alleged losses are unsupported and incorrect. Both Canada and Mexico have provided estimates that are vague, at best, and do little to accurately assess or attribute the economic impact of the amended COOL measure on domestic livestock transactions. For instance, there are numerous additional factors that would need to be considered in an econometric analysis of domestic price suppression – including Canadian and Mexican demand for livestock and differential input costs for domestic production.

IV. CONCLUSION

54. For the reasons set forth above, the United States respectfully requests that the Arbitrators find that the levels of suspension of concessions requested by Canada and Mexico are in excess of

the appropriate levels of nullification or impairment. As described above, the more appropriate level of nullification or impairment is approximately US$43.19 million per year for Canada, and US$49.18 million per year for Mexico, and even assuming extreme compliance costs, the level of nullification or impairment would certainly be no more than US$128.71 million per year for Canada, and US$78.95 million per year for Mexico.

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ANNEX C

ARBITRATOR'S DETERMINATION – DETAILS ON RESULTS AND CALCULTATIONS

ANNEX C-1

ECONOMETRIC RESULTS

Table 1: Variables list

Variable name	Variable description	Data sources[23]
350 lb. Mexican feeder cattle price basis	Weekly price basis for 350 lb. Mexican feeder cattle (USD/lb)	United States Department of Agriculture Market News report; Exhibits MEX Appendix 1, MEX Appendix 2
550 lb. Mexican feeder cattle price basis	Weekly price basis for 550 lb. Mexican feeder cattle (USD/lb)	United States Department of Agriculture Market News report; Exhibits MEX Appendix 1, MEX Appendix 2
450 lb. Canadian feeder cattle price basis	Weekly price basis for 450 lb. Canadian feeder cattle (CAD/lb)	CanFax; United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
550 lb. Canadian feeder cattle price basis	Weekly price basis for 550 lb. Canadian feeder cattle (CAD/lb)	CanFax; United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
650 lb. Canadian feeder cattle price basis	Weekly price basis for 650 lb. Canadian feeder cattle (CAD/lb)	CanFax; United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
750 lb. Canadian feeder cattle price basis	Weekly price basis for 750 lb. Canadian feeder cattle (CAD/lb)	CanFax; United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
850 lb. Canadian feeder cattle	Weekly price basis for 850 lb. Canadian feeder cattle (CAD/lb)	CanFax; United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
Canadian fed steers price basis	Weekly price basis for Canadian fed steers (CAD/lb)	CanFax; United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
Smaller Canadian feeder pigs price basis	Monthly price basis for smaller Canadian feeder pigs (CAD/head)	United States Department of Agriculture Market News report; Exhibit CAN-82
Monthly basis for larger Canadian feeder pigs	Monthly price basis for larger Canadian feeder pigs (CAD/head)	United States Department of Agriculture Market News report; Exhibit CAN-82
Canadian fed hogs price basis	Weekly price basis for Canadian fed hogs (CAD/lb)	Bank of Canada; United States Department of Agriculture Market News report; Exhibit CAN-69
Exchange rate	Weekly exchange rate (USD/CAD)	Bank of Canada; Exhibits CAN-68, CAN-69, CAN-81, CAN-82
Drought	Percentage of area in Texas subject to severe to extreme and exceptional drought	National Drought Mitigation Center; Exhibits CAN-68, CAN-81
Diesel price	Weekly diesel retail price (USD per Gallon)	United States Energy Information Administration; Exhibit USA-61B
Difference in unemployment between the USA and Mexico	Difference between the United States and Mexico national monthly unemployment rates	Bureau of Labor Statistics; Instituto Nacional De Estadistica Y Geographica; Exhibit MEX-43
Difference in unemployment between the USA and Canada	Difference between the United States and Canada national monthly unemployment rates	Bureau of Labor Statistics; Statistics Canada; Exhibits CAN-68, CAN-69, CAN-81, CAN-82
US corn price	Nearest expiring futures price of corn in the US market (USD per bushel)	Quandl.com; Exhibits CAN-68, CAN-69, CAN-81, CAN-82; MEX-43
US imports of Canadian feeder cattle	US imports of feeder cattle from Canada	United States Department of Agriculture Market News report; Exhibits CAN-35, CAN-68, CAN-81
US imports of Mexican feeder cattle	US imports of feeder cattle from Mexico	United States Department of Agriculture Economic Research Service; Exhibits MEX-30, MEX-43
PEDV cases 12 weeks previously	Number of cases of porcine epidemic diarrhea virus (PEDV) in the United States 12 weeks previously (4 weeks moving average)	American Association of Swine Veterinarians; Exhibit CAN-69

[23] See Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, and USA-61B.

Variable name	Variable description	Data sources[23]
Original COOL measure	Original COOL measure dummy taking the value of 1 after 29 September 2008	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
Amended COOL measure (23 May 2013)	Amended COOL measure dummy taking the value of 1 after 23 May 2013 (for small/medium feeder livestock)	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82
Amended COOL measure (1 July 2013)	Amended COOL measure dummy taking the value of 1 after 1 July 2013 (for large feeder livestock)	Exhibits CAN-35, CAN-68, CAN-81
Amended COOL measure (2 November 2013)	Amended COOL measure dummy taking the value of 1 after 2 November 2013 (for fed livestock)	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
Reopening of US border following BSE ban	Reopening of US border to Canada cattle over 30 months old following the BSE ban	Exhibits CAN-35 CAN-68, CAN-81
SRM regulation	Dummy variable for Canada's specified risk material (SRM) regulation	Exhibits CAN-35 CAN-68, CAN-81
Maple Leafs plant closing	Dummy variable for the closing of Maple Leafs plant	Exhibits CAN-36, CAN-69, CAN-82
US recession	Dummy variable for the US recession	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, USA-56, USA-61B
January	Dummy variable for the month of January	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
February	Dummy variable for the month of February	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
March	Dummy variable for the month of March	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
April	Dummy variable for the month of April	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
May	Dummy variable for the month of May	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
June	Dummy variable for the month of June	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
July	Dummy variable for the month of July	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
August	Dummy variable for the month of August	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
September	Dummy variable for the month of September	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
October	Dummy variable for the month of October	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
November	Dummy variable for the month of November	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B
December	Dummy variable for the month of December	Exhibits CAN-35, CAN-36, CAN-68, CAN-69, CAN-81, CAN-82, MEX-30, MEX-43, USA-61B

Table 2: Canada's econometric results on cattle's price basis[†]

	450 lb. feeder cattle's weekly price basis	550 lb. feeder cattle's weekly price basis	650 lb. feeder cattle's weekly price basis	750 lb. feeder cattle's weekly price basis	850 lb. feeder cattle's weekly price basis	Fed cattle's weekly price basis
Lagged dependent variable	0.488***	0.735***	0.630***	0.594***	0.631***	0.752***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Original COOL measure	0.0214	0.00347	0.0163	0.00399	0.00365	-0.0128**
	(0.398)	(0.849)	(0.314)	(0.762)	(0.734)	(0.038)
Amended COOL measure (23 May 2013)	-0.206***	-0.0936***	-0.0857***			
	(0.000)	(0.000)	(0.000)			
Amended COOL measure (1 July 2013)				-0.0648***	-0.0431***	
				(0.000)	(0.000)	
Amended COOL measure (2 November 2013)						-0.00789*
						(0.065)
Change in exchange rate	1.216***	1.592***	1.219***	1.354***	1.244***	0.870***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Reopening of US border following BSE ban	0.0591*	0.0301	0.0301	0.0460**	0.0364**	0.0197**
	(0.093)	(0.233)	(0.174)	(0.012)	(0.016)	(0.029)
SRM regulation in Canada	-0.00245	-0.00701	-0.0129	-0.0171	-0.0126	-0.000145
	(0.915)	(0.674)	(0.377)	(0.155)	(0.203)	(0.981)
Diesel retail price	0.0136	0.00247	0.00730	0.000949	0.00189	-0.00182
	(0.195)	(0.738)	(0.269)	(0.861)	(0.666)	(0.483)
Change in diesel retail price	0.225***	0.0929*	0.0654	0.0566	0.0254	0.0224
	(0.004)	(0.097)	(0.184)	(0.170)	(0.450)	(0.285)
Change in unemployment rate difference between the US and Canada	0.0827*	0.0268	0.0446	0.0252	0.0553***	0.00977
	(0.081)	(0.433)	(0.138)	(0.307)	(0.006)	(0.406)
US recession	-0.0579***	-0.0238*	-0.0252**	-0.0263***	-0.0211**	-0.00452
	(0.003)	(0.083)	(0.037)	(0.008)	(0.010)	(0.332)
Change in corn near term futures price	0.00569	0.0192	0.0277**	0.0153	0.0242***	-0.00183
	(0.800)	(0.231)	(0.047)	(0.187)	(0.010)	(0.756)
Change in drought areas in Texas	2.50e-05	0.00131*	0.000403	0.000230	-7.89e-06	-0.000309
	(0.980)	(0.076)	(0.524)	(0.657)	(0.985)	(0.235)
Change in export volumes of Mexican feeder cattle	-1.94e-07	1.20e-07	8.84e-08	2.24e-09	2.29e-08	
	(0.498)	(0.561)	(0.624)	(0.988)	(0.851)	
February	0.0163	-0.00439	-0.000345	-0.00244	-0.00507	-0.00202
	(0.533)	(0.817)	(0.984)	(0.858)	(0.651)	(0.714)
March	0.0285	-0.00430	0.000534	-0.00497	-0.00745	0.00337
	(0.277)	(0.820)	(0.974)	(0.712)	(0.502)	(0.538)

	450 lb. feeder cattle's weekly price basis	550 lb. feeder cattle's weekly price basis	650 lb. feeder cattle's weekly price basis	750 lb. feeder cattle's weekly price basis	850 lb. feeder cattle's weekly price basis	Fed cattle's weekly price basis
April	0.0216	-0.000569	0.00503	-0.00154	-0.00675	0.00486
	(0.412)	(0.976)	(0.765)	(0.910)	(0.546)	(0.376)
May	0.0325	0.0163	0.00910	0.000474	-0.0152	0.00770
	(0.220)	(0.400)	(0.593)	(0.973)	(0.177)	(0.166)
June	0.0308	-0.000886	0.0105	-0.0136	-0.0174	0.0116**
	(0.294)	(0.965)	(0.548)	(0.328)	(0.117)	(0.039)
July	0.0677**	0.0225	0.00347	-0.00106	-0.0108	0.00633
	(0.015)	(0.255)	(0.838)	(0.939)	(0.335)	(0.268)
August	0.0174	-0.00272	-0.00567	-0.00661	-0.00828	0.00222
	(0.516)	(0.887)	(0.732)	(0.624)	(0.455)	(0.688)
September	0.0693**	0.0168	0.0143	-0.000677	-0.00974	-0.00750
	(0.010)	(0.384)	(0.395)	(0.961)	(0.386)	(0.165)
October	0.0717***	0.0225	0.00705	-0.00289	-0.0155	0.00113
	(0.008)	(0.243)	(0.671)	(0.830)	(0.159)	(0.839)
November	0.0526*	-0.00841	-0.0134	-0.0212	-0.0289***	0.00399
	(0.051)	(0.661)	(0.419)	(0.115)	(0.009)	(0.460)
December	0.0196	-0.0104	-0.00729	-0.0150	-0.0255**	0.00673
	(0.464)	(0.590)	(0.666)	(0.276)	(0.025)	(0.217)
Constant	-0.224***	-0.0697**	-0.0911***	-0.0664***	-0.0571***	-0.0261***
	(0.000)	(0.016)	(0.000)	(0.002)	(0.001)	(0.002)
Observations	413	425	433	429	434	449
Adjusted R-squared	0.761	0.851	0.767	0.732	0.752	0.755

† Note: The p-values are reported in parenthesis.
*** p-value<0.01, ** p-value<0.05, * p-value<0.1.

Table 3: Canada's econometric results on pigs' price basis†

	Small feeder pigs' monthly price basis	Large feeder pigs' monthly price basis	Fed hogs' weekly price basis
Lagged dependent variable	0.688***	0.751***	0.781***
	(0.000)	(0.000)	(0.000)
Original COOL measure	-0.214	-0.0872	-0.00592***
	(0.775)	(0.965)	(0.005)
Amended COOL measure (23 May 2013)	-1.620**	-5.680***	
	(0.024)	(0.007)	
Amended COOL measure (2 November 2013)			-0.0113***
			(0.000)
Change in exchange rate	-3.918	17.37	0.821***
	(0.751)	(0.591)	(0.000)
Maple Leafs plant closing	0.0844	-1.177	0.00207

	Small feeder pigs' monthly price basis	Large feeder pigs' monthly price basis	Fed hogs' weekly price basis
	(0.931)	(0.645)	(0.440)
Diesel retail price	0.373	1.104	-0.00162
	(0.366)	(0.288)	(0.124)
Change in diesel retail price	-0.544	1.184	-0.00715
	(0.709)	(0.758)	(0.484)
Change in unemployment rate difference between the US and Canada	-0.590	2.596	0.000660
	(0.591)	(0.366)	(0.913)
US recession	-0.999	1.835	0.00120
	(0.175)	(0.329)	(0.532)
Change in corn near term futures price	1.066*	2.140	-0.00233
	(0.063)	(0.160)	(0.442)
Change in PEDV cases 12 weeks previously	0.000726	-0.0486	-0.000184
	(0.958)	(0.183)	(0.187)
February	1.214	1.070	-0.00151
	(0.203)	(0.668)	(0.577)
March	1.651*	0.632	-0.00146
	(0.091)	(0.806)	(0.583)
April	1.961**	3.504	-0.00147
	(0.047)	(0.178)	(0.583)
May	1.803*	10.11***	0.00121
	(0.068)	(0.000)	(0.649)
June	0.761	9.420***	-0.00276
	(0.441)	(0.000)	(0.302)
July	1.131	9.493***	-0.00238
	(0.264)	(0.000)	(0.375)
August	1.719*	9.374***	0.00254
	(0.082)	(0.000)	(0.344)
September	1.029	8.056***	-0.00183
	(0.301)	(0.003)	(0.501)
October	-0.0128	2.863	0.00101
	(0.990)	(0.281)	(0.706)
November	-0.0936	3.241	0.00184
	(0.922)	(0.210)	(0.492)
December	-0.481	-2.002	0.00375
	(0.618)	(0.434)	(0.162)
Constant	-3.215**	-10.98***	-0.0192***
	(0.021)	(0.001)	(0.000)
Observations	132	132	565
Adjusted R-squared	0.634	0.830	0.880

[†] Note: The p-values are reported in parenthesis.
*** p-value<0.01, ** p-value<0.05, * p-value<0.1.

Table 4: Mexico's econometric estimation results on cattle's price basis[†]

	350 lb. feeder cattle's price basis	550 lb. feeder cattle's price basis
Lagged dependent variable	0.210***	0.147***
	(0.000)	(0.004)
Original COOL measure	-0.0970***	-0.0917***
	(0.000)	(0.000)
Amended COOL measure (2 November 2013)	-0.0246**	0.00848
	(0.041)	(0.447)
Change in diesel retail price	-0.00247	-0.0383
	(0.971)	(0.574)
Change in unemployment rate difference	-0.0177	0.0239
	(0.436)	(0.269)
US recession	-0.0215*	-0.0119
	(0.068)	(0.325)
Change in corn near term futures price	0.0134	0.00988
	(0.520)	(0.611)
Change in export volumes of Canadian feeder cattle	-0.00133	0.000549
	(0.146)	(0.537)
Change in drought areas in Texas	3.94e-07	6.49e-07
	(0.839)	(0.727)
February	0.0362	0.0144
	(0.123)	(0.519)
March	0.0488**	0.0204
	(0.037)	(0.358)
April	0.0580**	0.0255
	(0.014)	(0.256)
May	0.0750***	0.0345
	(0.002)	(0.125)
June	0.0739***	0.0340
	(0.002)	(0.129)
July	0.0627***	0.0272
	(0.009)	(0.228)
August	0.0268	0.0531**
	(0.254)	(0.018)
September	0.0578**	0.0761***
	(0.015)	(0.001)
October	0.0787***	0.0797***
	(0.001)	(0.001)
November	0.0710***	0.0733***
	(0.002)	(0.001)

	350 lb. feeder cattle's price basis	550 lb. feeder cattle's price basis
December	0.00667	0.0131
	(0.781)	(0.566)
Constant	-0.0701***	-0.100***
	(0.001)	(0.000)
Observations	421	416
Adjusted R-squared	0.449	0.377

[†]Note: The p-values are reported in parenthesis.
*** p-value<0.01, ** p-value<0.05, * p-value<0.1.

ANNEX C-2

EXPORT SUPPLY ELASTICITY CALCULATIONS[24]

Table 5: Computation of Canada's export supply elasticities of feeder cattle

Definition of export share	Export share	Demand elasticity	Supply elasticity	Export supply elasticity[25]
$\frac{\text{Feeder cattle export}}{\text{Slaughtered cattle} + \text{Feeder and fed cattle export}}$ [26]	0.15	-0.14	0.22	2.33
$\frac{\text{Feeder cattle export}}{\text{Slaughtered cattle} + \text{Feeder cattle export}}$ [27]	0.14	-0.14	0.22	2.49
$\frac{\text{Feeder and fed cattle export}}{\text{Calf crop production}}$ [28]	0.19	-0.14	0.22	1.71
			Average	**2.18**

[24] For each definition of export share submitted by the parties, the computation uses the data and corresponding baseline period provided by each party in connection with its definition of the export share.

[25] The export supply elasticity is computed as $[(\varepsilon_s - \eta\ (\ 1- \omega)]/\ \omega$, where ε_s is the supply elasticity in the domestic market of livestock, η is the demand elasticity in the domestic market of livestock, and ω is the export share of livestock in the domestic supply.

[26] See Canada's response to Arbitrator question No. 31, paras. 91-94. Data taken from Exhibit CAN-63. Baseline period's export share: July 2014-June 2015.

[27] See United States' response to Arbitrator question No. 46, para. 87. Data taken from United States' response to Arbitrator question No. 46, para. 87 and Exhibit USA-3. Baseline period's export share: January 2014-December 2014.

[28] See United States' response to Arbitrator question No. 31, para. 121. Data taken from Exhibit USA-51. Baseline period's export share: January 2014-December 2014.

Table 6: Computation of Canada's export supply elasticities of fed cattle

Definition of export share	Export share	Demand elasticity	Supply elasticity	Export supply elasticity[29]
$\frac{\text{Fed cattle export}}{\text{Slaughtered cattle} + \text{Feeder and fed cattle export}}$ [30]	0.10	-0.40	0.26	6.50
$\frac{\text{Fed cattle export}}{\text{Slaughtered cattle} + \text{Fed cattle export}}$ [31]	0.12	-0.40	0.26	5.30
$\frac{\text{Feeder and fed cattle export}}{\text{Calf crop production}}$ [32]	0.19	-0.40	0.26	3.00
			Average	**4.93**

Table 7: Computation of Canada's export supply elasticities of feeder pigs

Definition of export share	Export share	Demand elasticity	Supply elasticity	Export supply elasticity[33]
$\frac{\text{Feeder pigs export}}{\text{Slaughtered hogs} + \text{Feeder pigs and fed hogs export}}$ [34]	0.16	-0.32	0.64	5.56
$\frac{\text{Feeder pigs export}}{\text{Slaughtered hogs} + \text{Feeder pigs export}}$ [35]	0.17	-0.32	0.64	5.38
$\frac{\text{Feeder pigs and fed hogs export}}{\text{Pig crop production}}$ [36]	0.18	-0.32	0.64	5.01
			Average	**5.32**

[29] The export supply elasticity is computed as $[(\varepsilon_s - \eta\ (\ 1- \omega)]/\ \omega$, where ε_s is the supply elasticity in the domestic market of livestock, η is the demand elasticity in the domestic market of livestock, and ω is the export share of livestock in the domestic supply.

[30] See Canada's response to Arbitrator question No. 31, paras. 91-94. Data taken from Exhibit CAN-63. Baseline period's export share: July 2014-June 2015.

[31] See United States' response to Arbitrator question No. 46, para. 87. Data taken from United States' response to Arbitrator question No. 46, para. 87 and Exhibit USA-3. Baseline period's export share: January 2014-December 2014.

[32] See United States' response to Arbitrator question No. 31, para. 121. Data taken from Exhibit USA-51. Baseline period's export share: January 2014-December 2014.

[33] The export supply elasticity is computed as $[(\varepsilon_s - \eta\ (\ 1- \omega)]/\ \omega$, where ε_s is the supply elasticity in the domestic market of livestock, η is the demand elasticity in the domestic market of livestock, and ω is the export share of livestock in the domestic supply.

[34] See Canada's response to Arbitrator question No. 31, paras. 95-97. Data taken from Exhibit CAN-63. Baseline period's export share: July 2014-June 2015.

[35] See United States' response to Arbitrator question No. 46, para. 87. Data taken from Exhibit USA-3 and Exhibit CAN-67. Baseline period's export share: January 2014-December 2014.

[36] See United States' response to Arbitrator question No. 31, para. 121. Data taken from Exhibit USA-51. Baseline period's export share: January 2014-December 2014.

Table 8: Computation of Canada's export supply elasticities of fed hogs

Definition of export share	Export share	Demand elasticity	Supply elasticity	Export supply elasticity[37]
$\frac{\text{Fed hogs export}}{\text{Slaughtered hogs} + \text{Feeder pigs and fed hogs export}}$ [38]	0.021	-0.51	0.41	40.40
$\frac{\text{Fed hogs export}}{\text{Slaughtered hogs} + \text{Fed hogs export}}$ [39]	0.036	-0.51	0.41	24.91
$\frac{\text{Feeder pigs and fed hogs export}}{\text{Pig crop production}}$ [40]	0.180	-0.51	0.41	4.62
			Average	**23.31**

[37] The export supply elasticity is computed as $[(\varepsilon_s - \eta\ (\ 1- \omega)]/\ \omega$, where ε_s is the supply elasticity in the domestic market of livestock, η is the demand elasticity in the domestic market of livestock, and ω is the export share of livestock in the domestic supply.

[38] See Canada's response to Arbitrator question No. 31, paras. 95-97. Data taken from Exhibit CAN-63. Baseline period's export share: July 2014-June 2015.

[39] See United States' response to Arbitrator question No. 46, para. 87. Data taken from Exhibit USA-3 and Exhibit CAN-67. Baseline period's export share: January 2014-December 2014.

[40] See United States' response to Arbitrator question No. 31, para. 121. Data taken from Exhibit USA-51. Baseline period's export share: January 2014-December 2014.

Table 9: Computation of Mexico's export supply elasticities of feeder cattle

Definition of export share	Export share	Demand elasticity	Supply elasticity	Export supply elasticity[41]
$\frac{\text{Feeder cattle export}}{\text{Eligible beef crop}}$ [42]	0.75	-0.14	0.22	0.34
$\frac{\text{Feeder cattle export}}{\text{Total beef crop}}$ [43]	0.23	-0.14	0.22	1.41
$\frac{\text{Feeder cattle export}}{\text{Eligible beef crop export}}$ [44]	1.00	-0.14	0.22	0.22
$\frac{\text{Feeder cattle export}}{\text{Calf crop (production)}}$ [45]	0.17	-0.14	0.22	2.04
$\frac{\text{Feeder cattle export}}{\text{Total cattle population}}$ [46]	0.04	-0.14	0.22	8.56
			Average	**2.52**

[41] The export supply elasticity is computed as $[(\varepsilon_s - \eta\ (\ 1- \omega)]/\ \omega$, where ε_s is the supply elasticity in the domestic market of livestock, η is the demand elasticity in the domestic market of livestock, and ω is the export share of livestock in the domestic supply.

[42] See Mexico's methodology paper, Pouliot Study, pp. 19-21. Data taken from Exhibit MEX-2.

[43] See Mexico's response to Arbitrator question No. 18, paras. 56-60. Data taken from Exhibit MEX-2.

[44] See Mexico's response to Arbitrator question No. 18, paras. 56-60. Data taken from Exhibit MEX-2.

[45] See United States' response to Arbitrator question No. 31, para. 121. Data taken from Exhibit USA-51.

[46] See Mexico's response to Arbitrator question No. 31, para. 88. Data taken from Exhibit MEX-2.