Creation and diversion of income and jobs: the case of the Korea – U.S. Free Trade Agreement (Online Appendix [A])

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December 2020

This appendix offers visualisations of selected results from the 400 Monte Carlo runs as part of the stochastic approach to estimate trade creation (diversion, contraction) effect on GDP, value added and employment by industry in the Korea – U.S. pair. As briefly explained in subsection 2.5 of the main text, an initial matrix that is required in the RAS balancing routine to obtain the target matrix (the matrix of bilateral allocation of market share losses to gains) is generated 400 times from the standard uniform distribution. This finally leads to a sample of 400 estimates for each effect, each country and each variable.

Further in this appendix, figures show the histogram counts, with 20 bins in each histogram. The blue line denotes the sample mean (the baseline estimate), and the red line denotes an alternative estimate obtained from the simplified, bi-proportional allocation of market share changes. In the bi-proportional allocation, the initial matrix in the RAS balancing procedure is made of zeros and ones (see Muradov 2020). The red line may overlap the blue line if the difference between the sample mean and the estimate from the bi-proportional allocation is minimal.

The results are only from the additive decomposition, the dependent variable coverage is limited to GDP and industry value added in the U.S., the industry coverage is limited to two manufacturing and two service industries discussed in subsection 3.3 of the main text, and the time coverage is limited to yearly intervals from 2011-2012 to 2014-2015 when the KORUS FTA was operational.

The histograms in the left part of each figure (subfigures (a), (d), (g) and (j)) count the results for the U.S. as the home country, the histograms in the centre ((b), (e), (h), (k)) are for the U.S. as a partner country, and those in the right part ((c), (f), (i), (k)) show the net results, *i.e.*, the sum of the first and the second. The caption under subfigure is marked by an asterisk if both Lilliefors and Shapiro-Wilk tests do not reject the normality hypothesis at the 5% significance level (note that the distributions of the net results in subfigures (c), (f), (i), (k) were not tested for normality).

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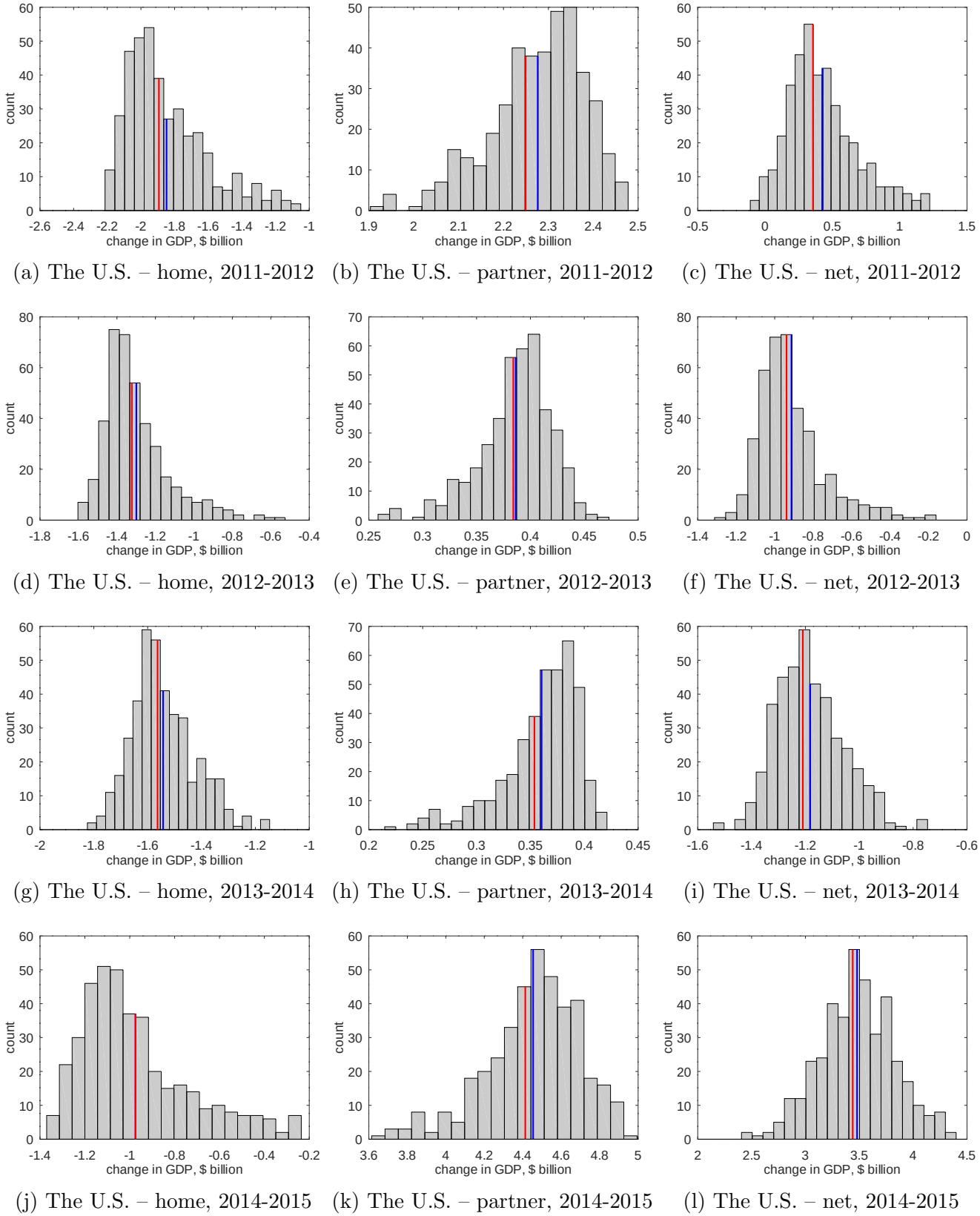


(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

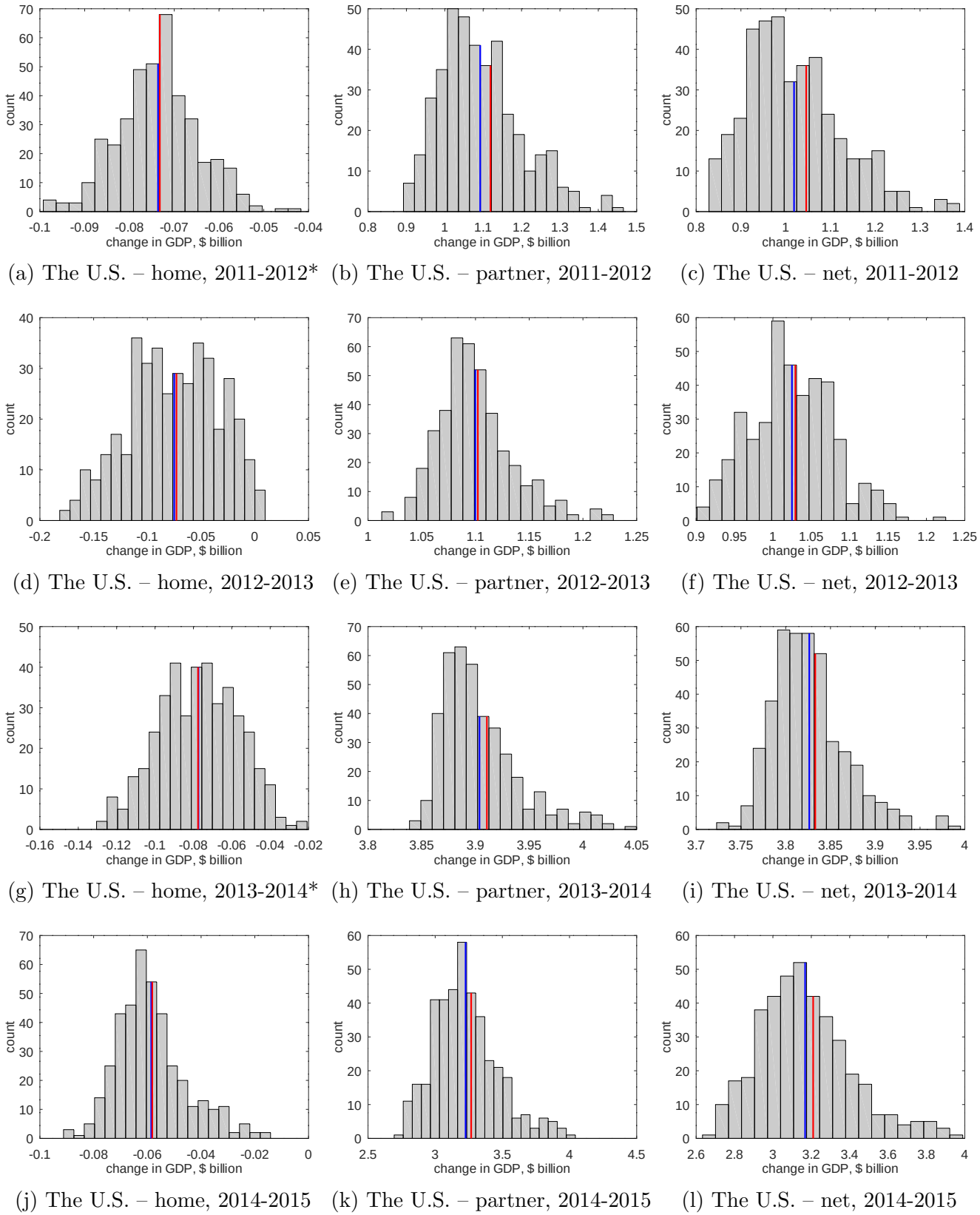
(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 1: Changes in the U.S. GDP induced by the bilateral trade creation effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012* (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

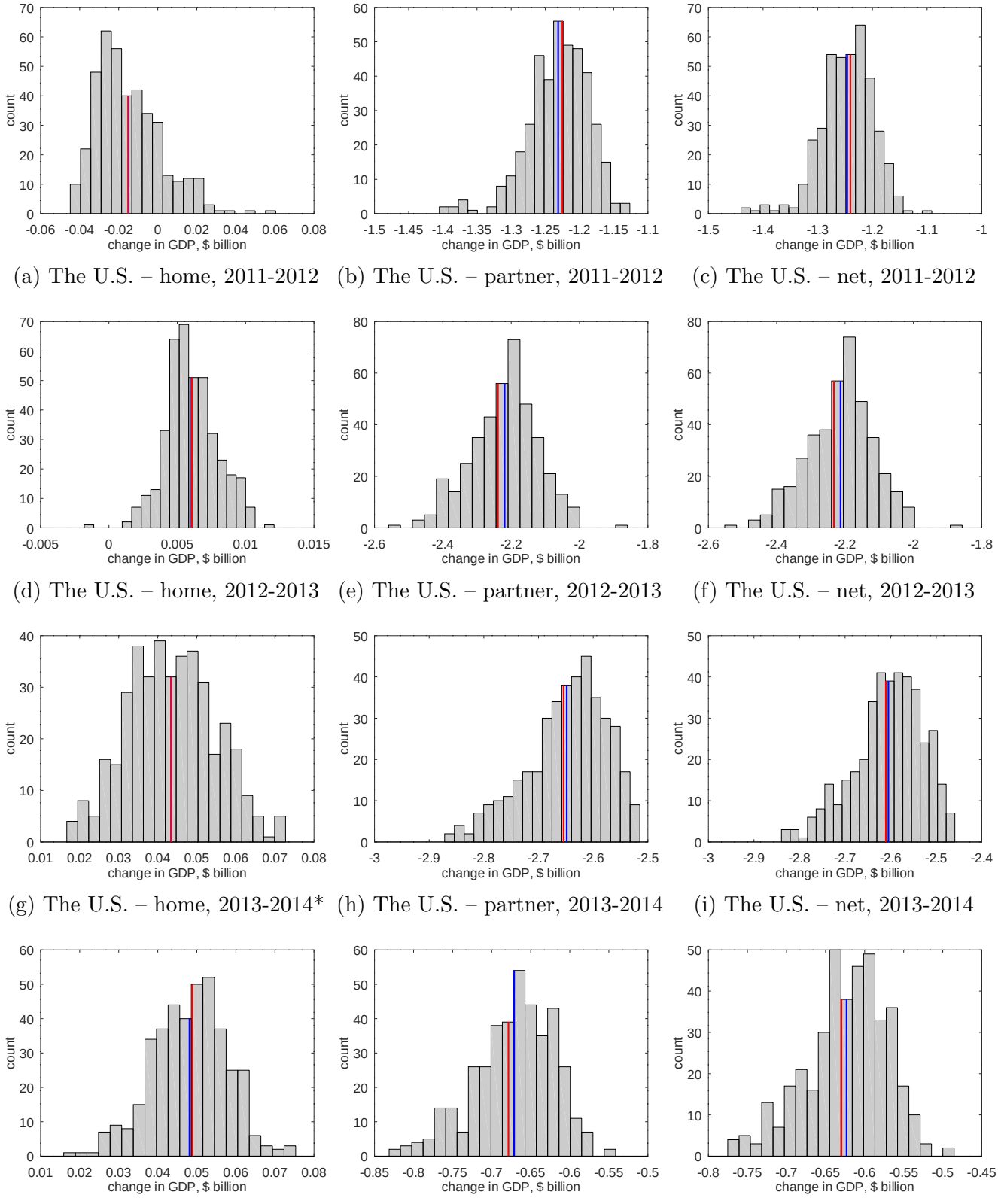
(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

(g) The U.S. – home, 2013-2014* (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

Figure 2: Changes in the U.S. GDP induced by the bilateral trade diversion (*in*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

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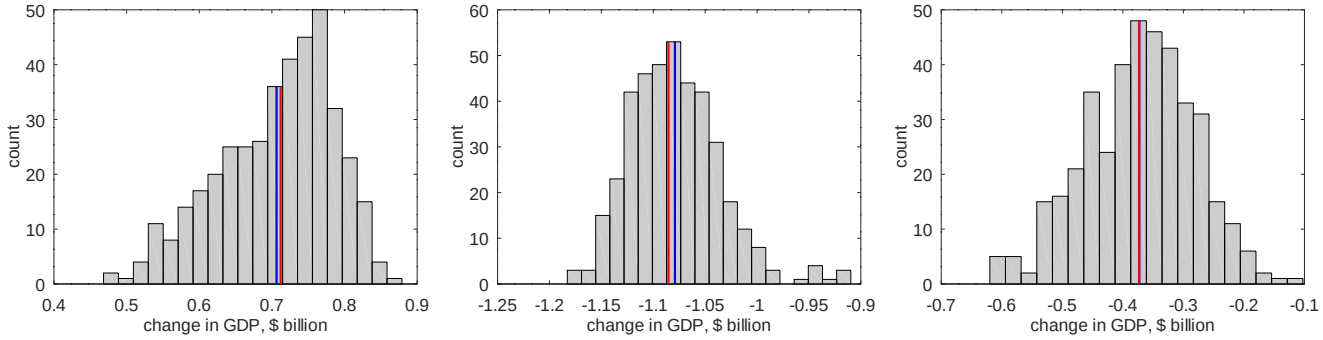
(j) The U.S. – home, 2014-2015* (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean — the result from a simplified (bi-proportional) allocation

Figure 3: Changes in the U.S. GDP induced by the bilateral trade diversion (*out*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



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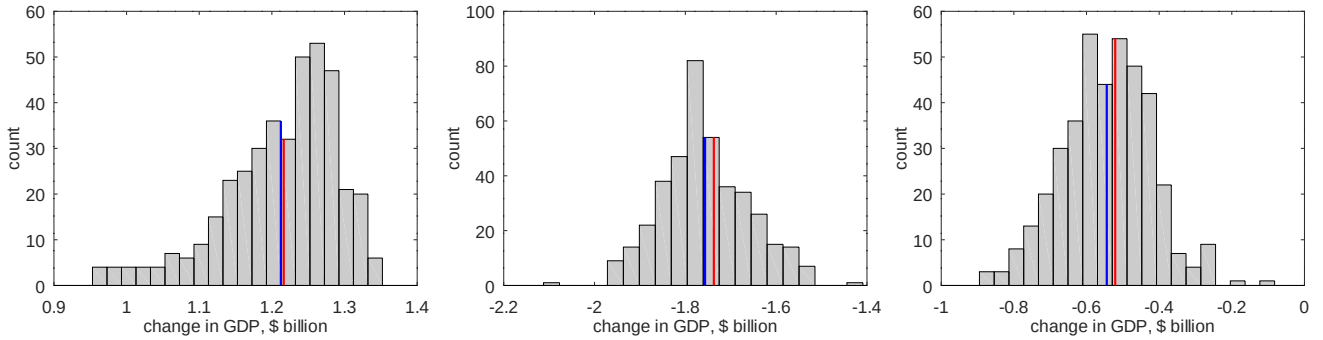
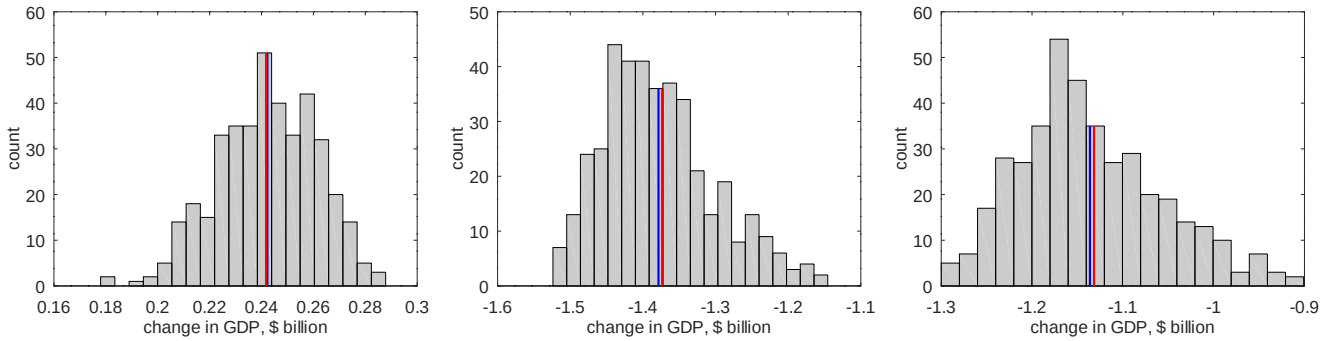
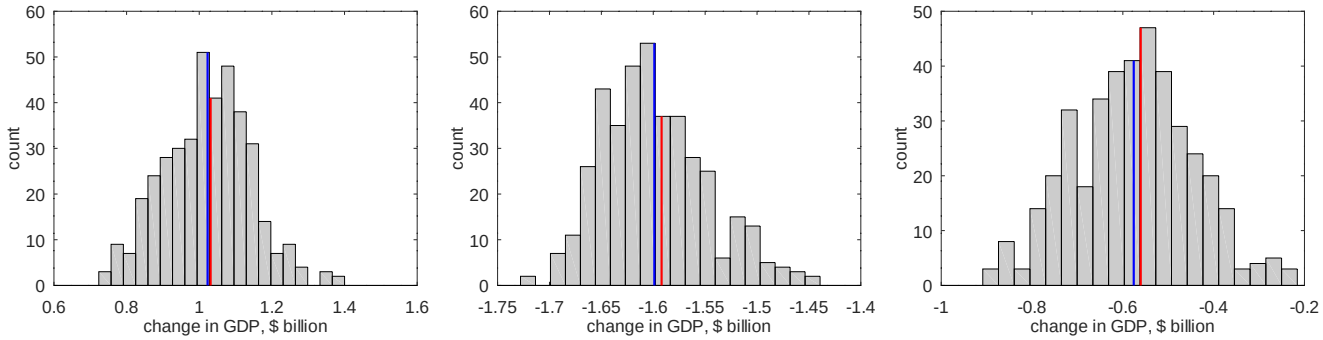


(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013



(g) The U.S. – home, 2013-2014* (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

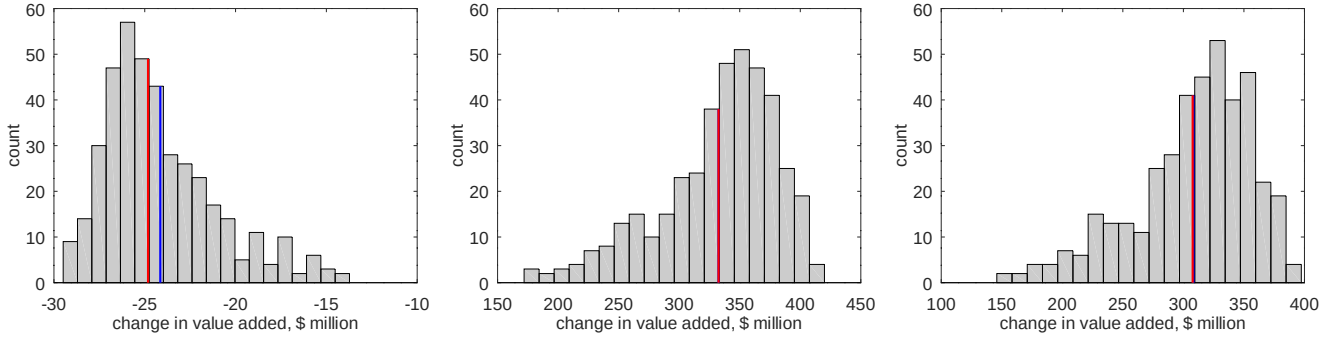


(j) The U.S. – home, 2014-2015* (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

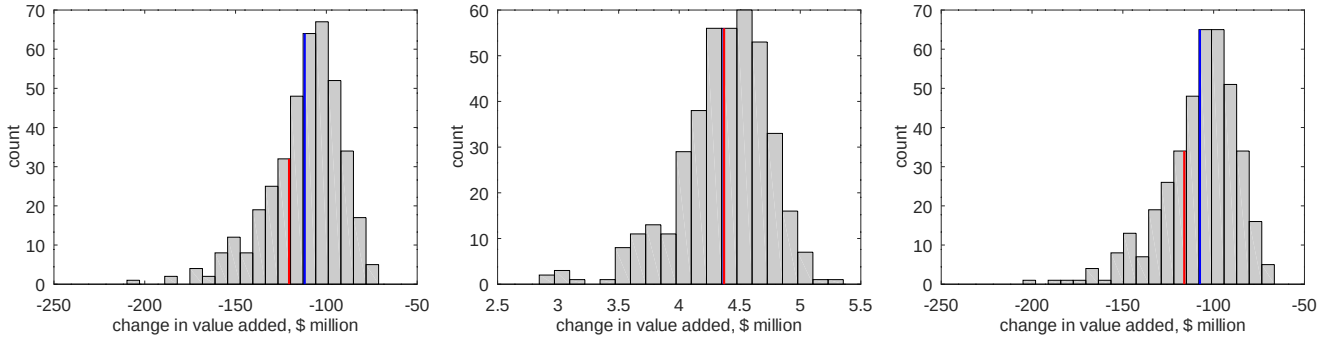
sample mean the result from a simplified (bi-proportional) allocation

Figure 4: Changes in the U.S. GDP induced by the bilateral trade contraction effect with Korea: distribution of the results from the Monte Carlo simulations

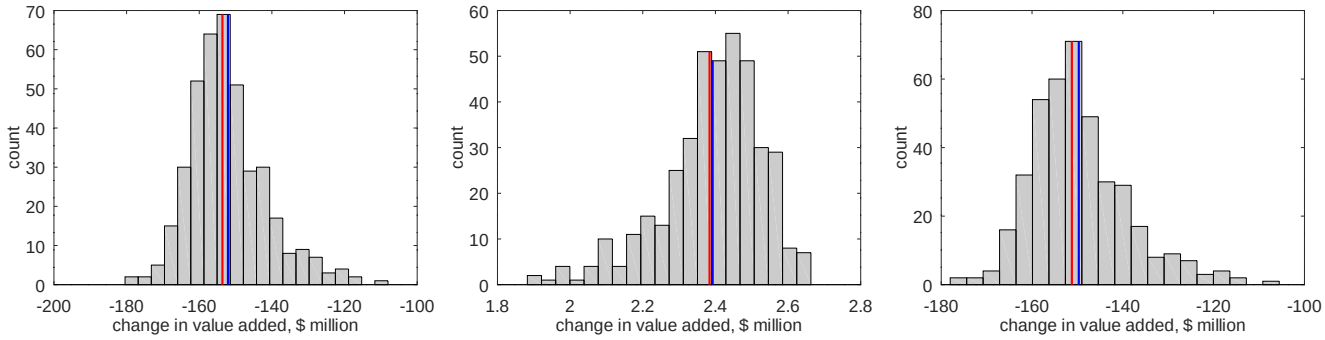
Source: OECD ICIO tables (2018 release), author's calculations.



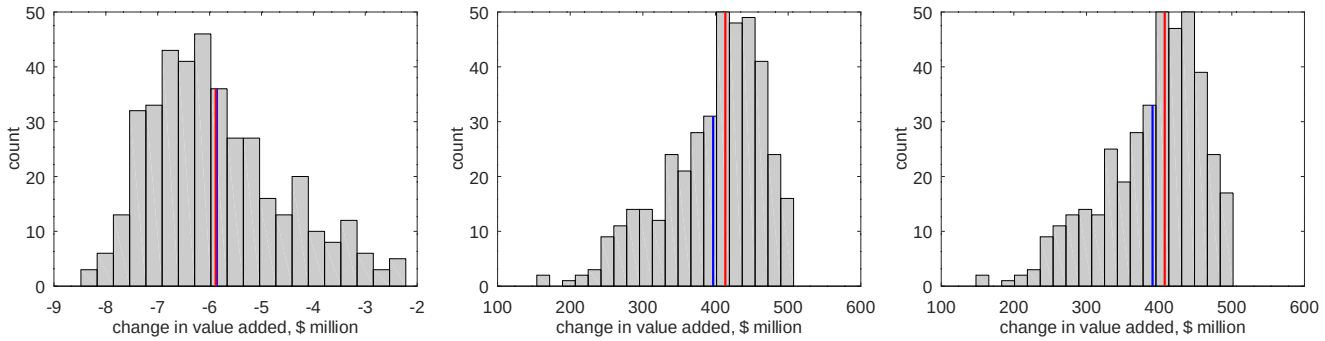
(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012



(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013



(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

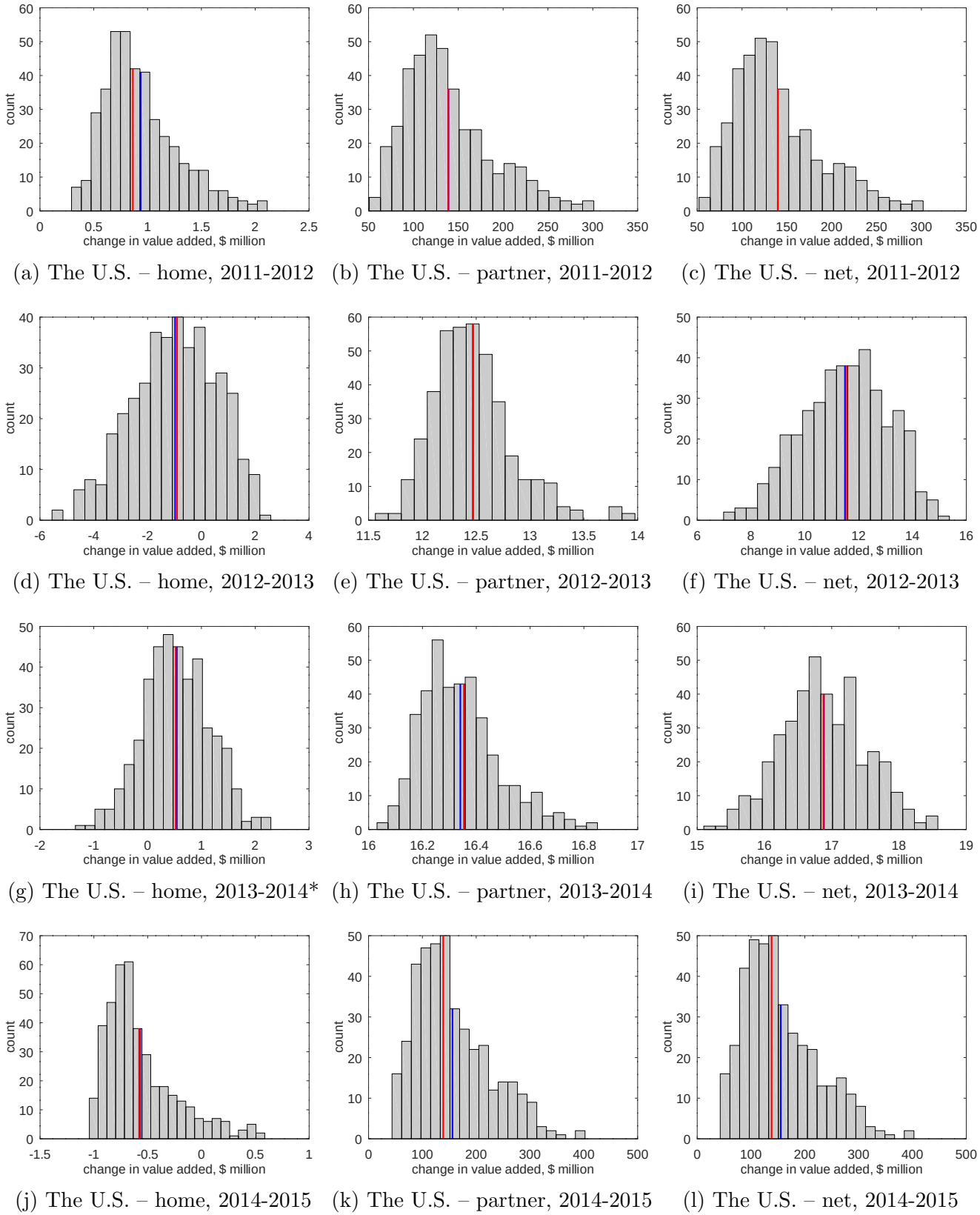


(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 5: Changes in the value added of the "Computer, electronic and optical products" (D26) industry in the U.S. induced by the bilateral trade creation effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

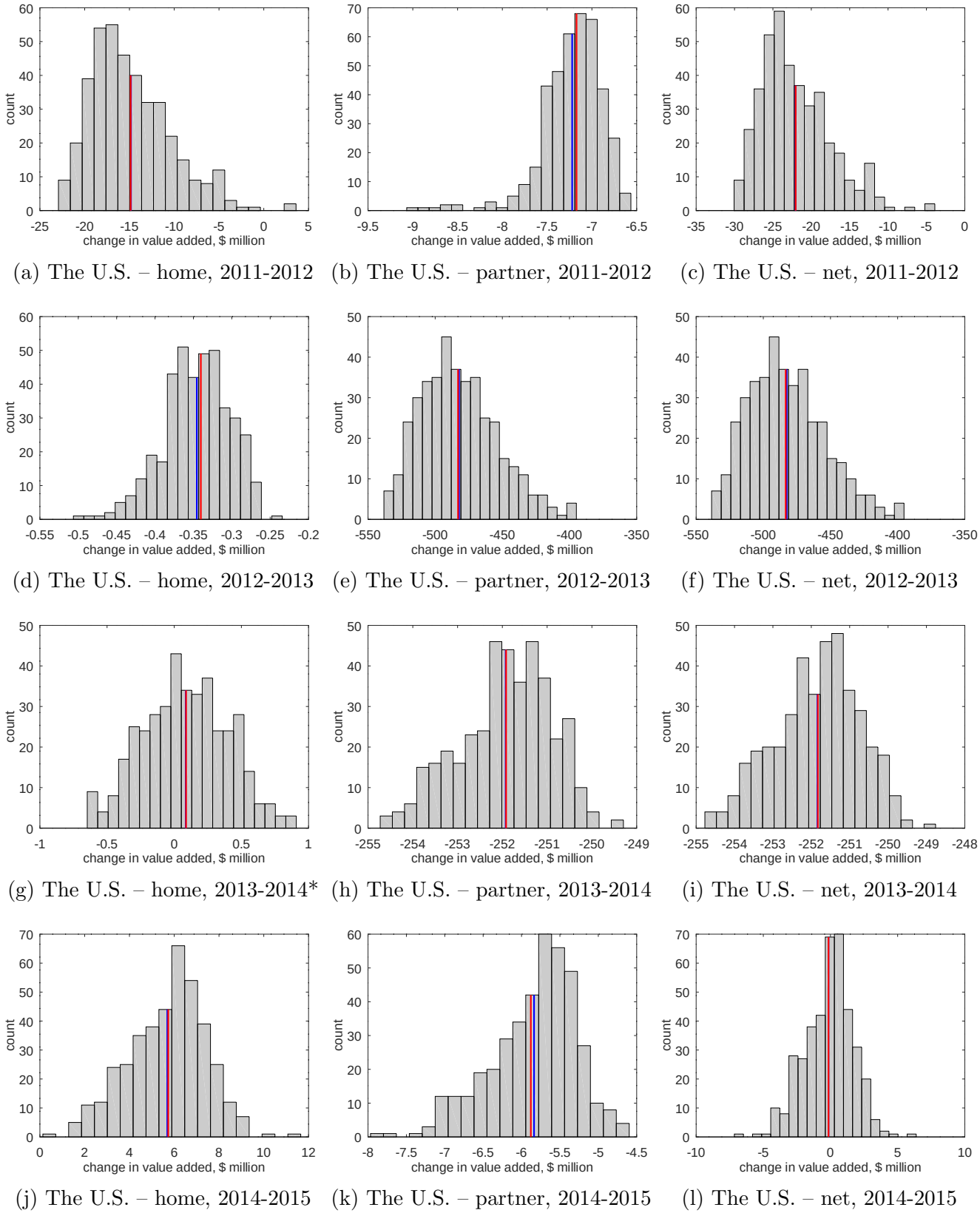
(g) The U.S. – home, 2013-2014* (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 6: Changes in the value added of the "Computer, electronic and optical products" (D26) industry in the U.S. induced by the bilateral trade diversion (*in*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

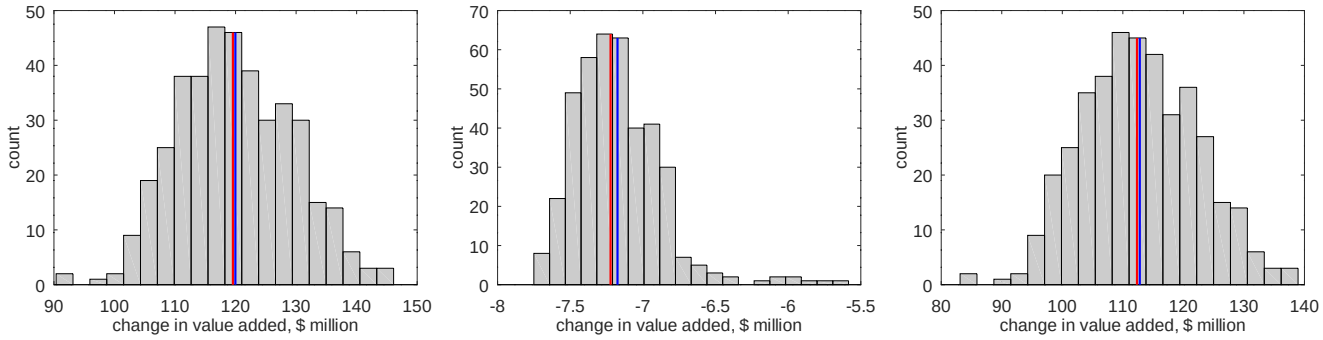
(g) The U.S. – home, 2013-2014* (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

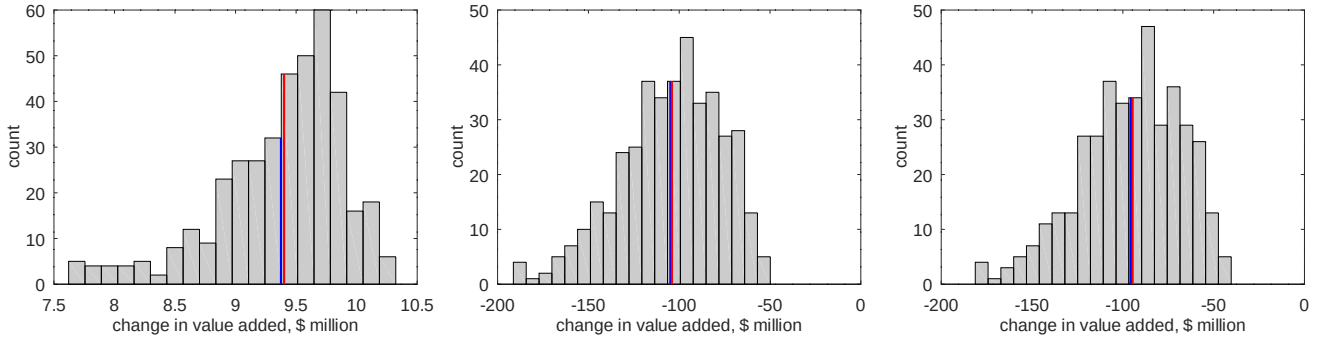
sample mean the result from a simplified (bi-proportional) allocation

Figure 7: Changes in the value added of the "Computer, electronic and optical products" (D26) industry in the U.S. induced by the bilateral trade diversion (*out*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012* (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012



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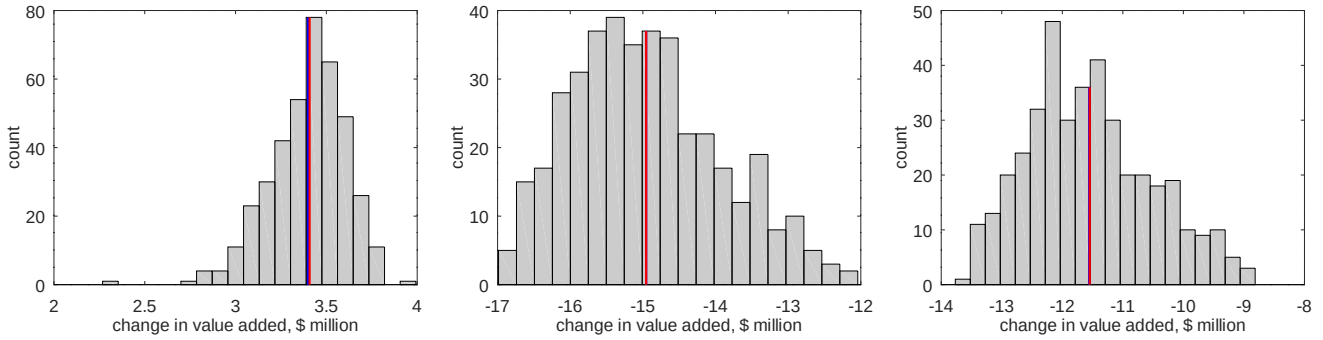

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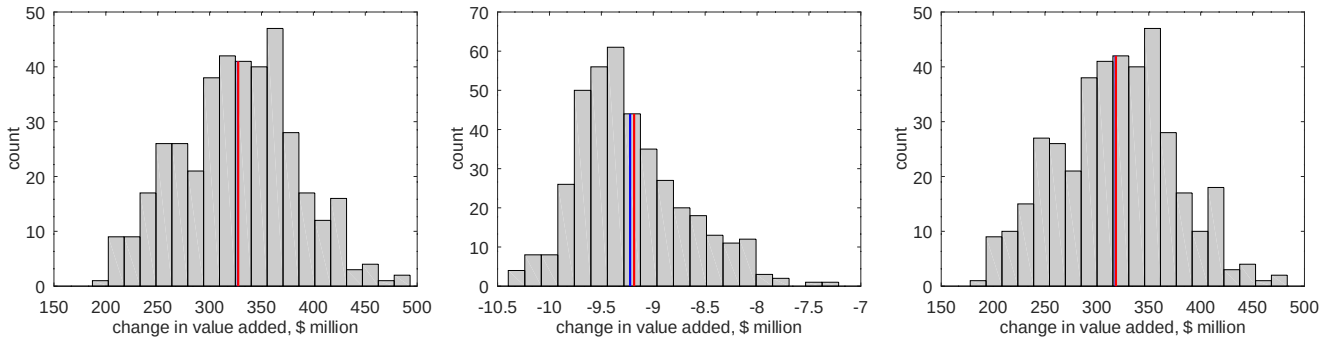
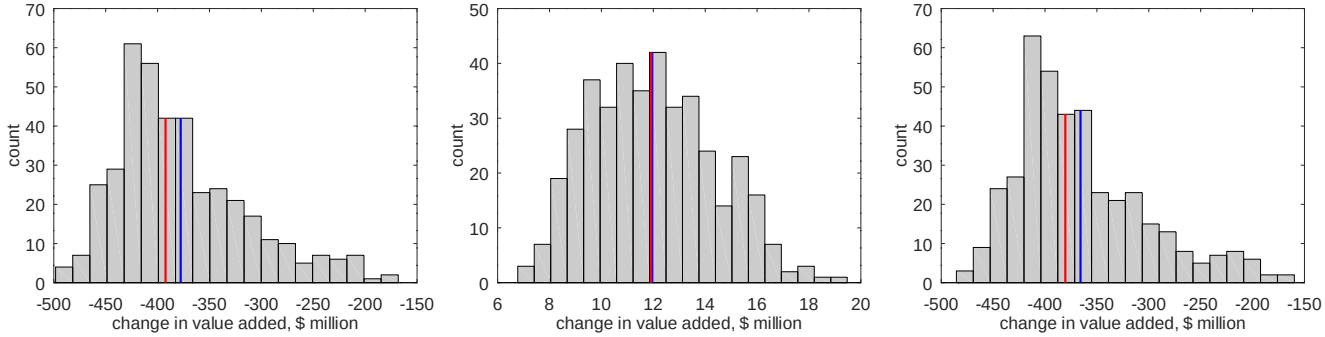


(j) The U.S. – home, 2014-2015* (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 8: Changes in the value added of the "Computer, electronic and optical products" (D26) industry in the U.S. induced by the bilateral trade contraction effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



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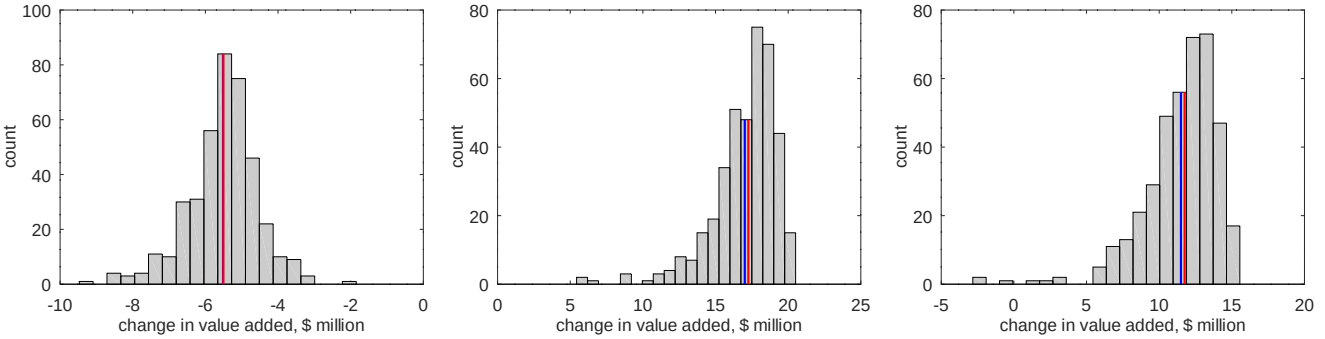

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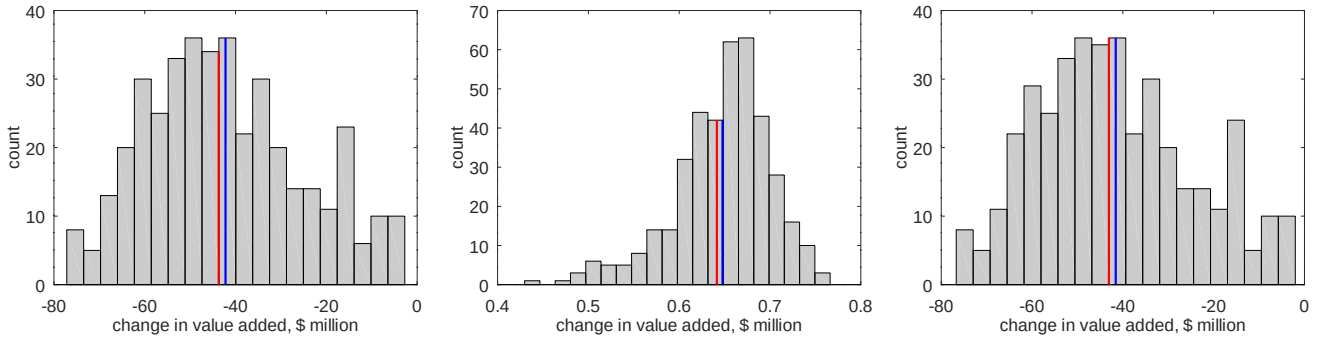

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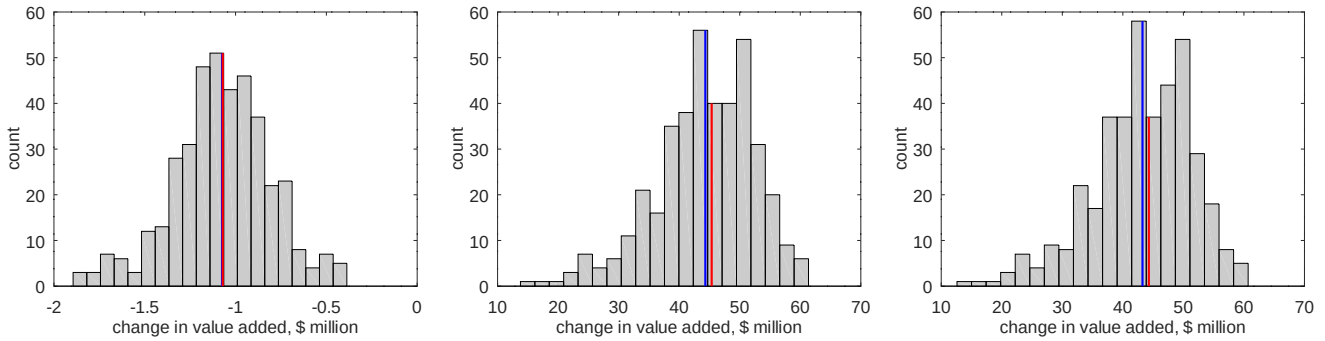
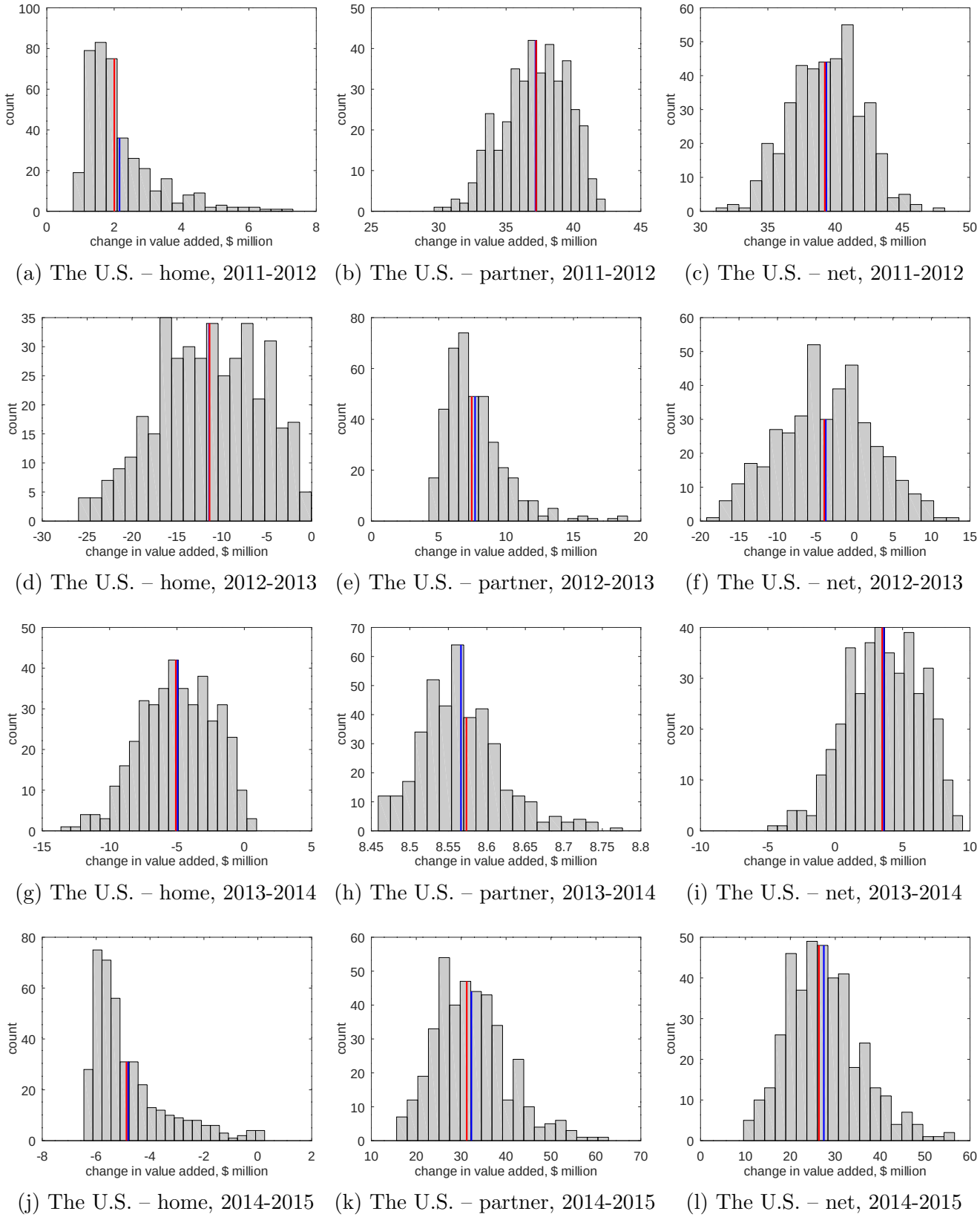


(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 9: Changes in the value added of the "Motor vehicles, trailers and semi-trailers" (D29) industry in the U.S. induced by the bilateral trade creation effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

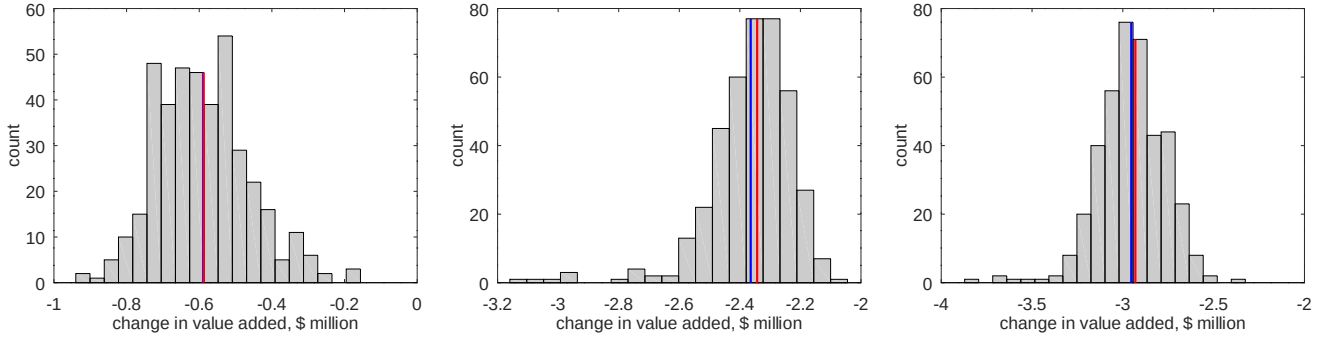
(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 10: Changes in the value added of the "Motor vehicles, trailers and semi-trailers" (D29) industry in the U.S. induced by the bilateral trade diversion (*in*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



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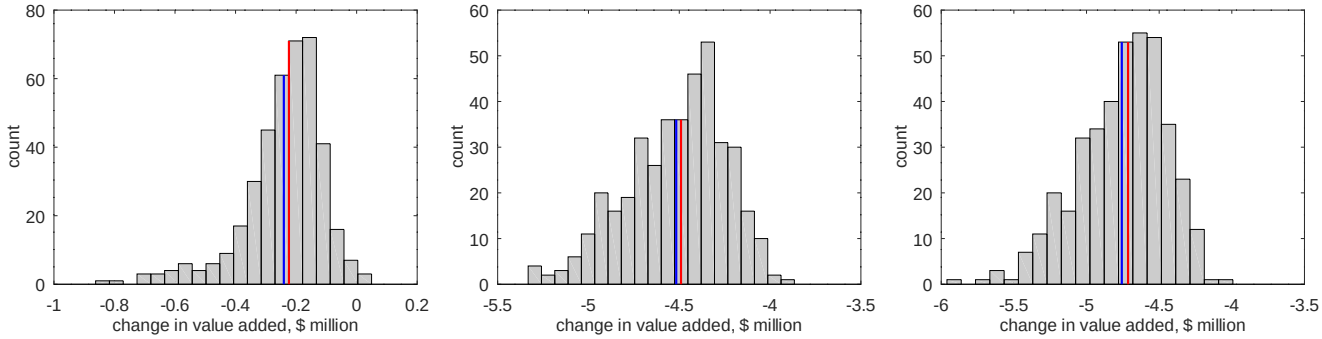

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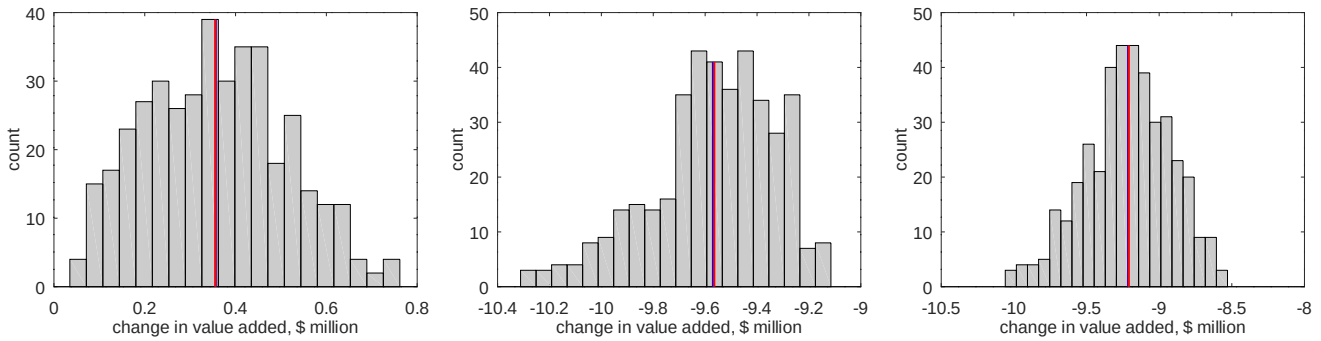

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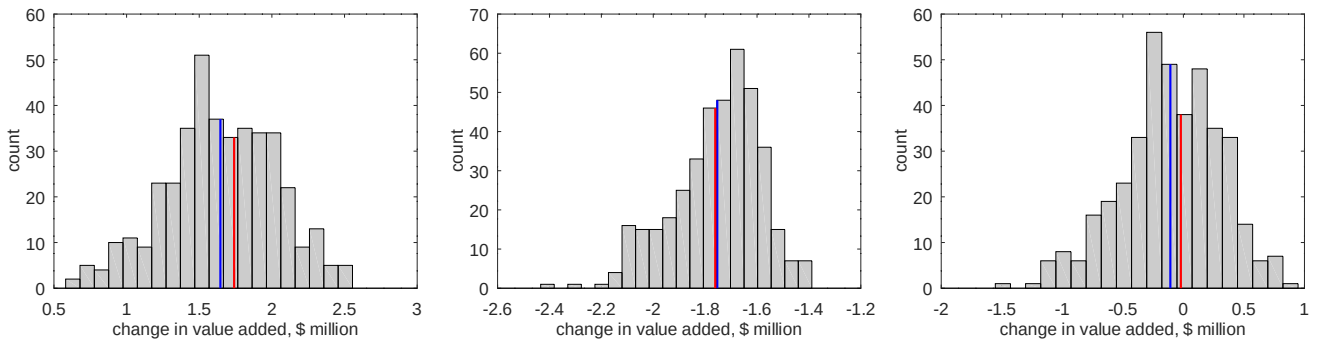
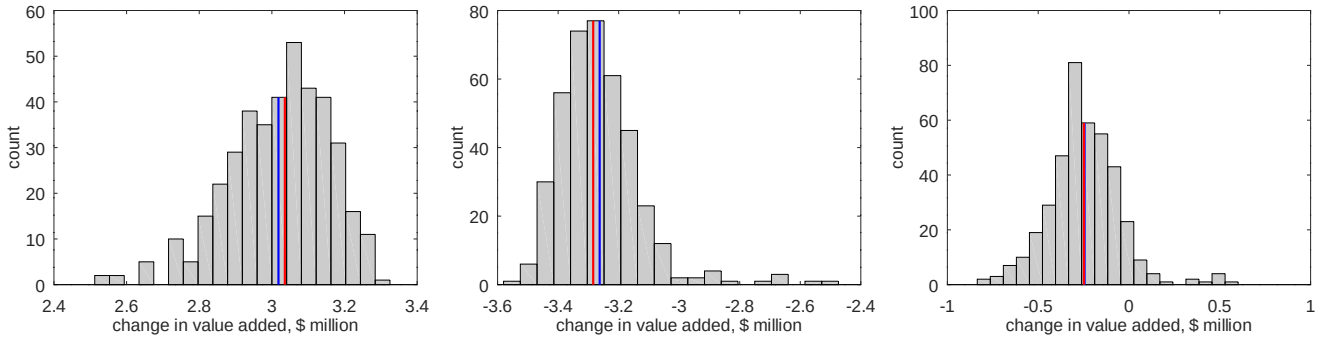


(j) The U.S. – home, 2014-2015* (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

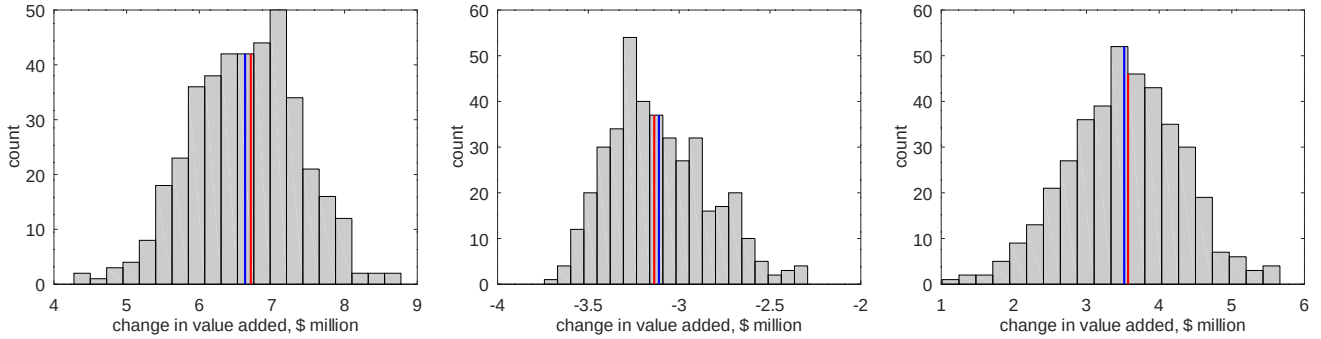
sample mean the result from a simplified (bi-proportional) allocation

Figure 11: Changes in the value added of the "Motor vehicles, trailers and semi-trailers" (D29) industry in the U.S. induced by the bilateral trade diversion (*out*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012



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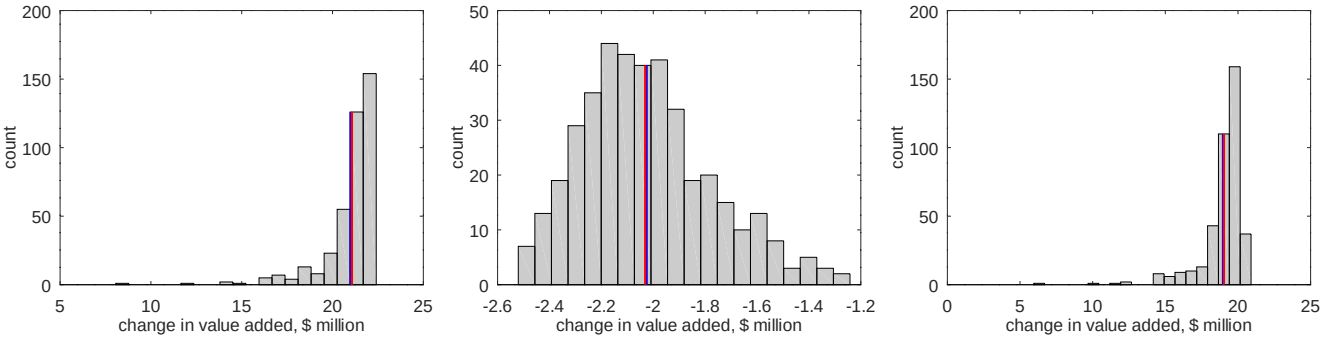
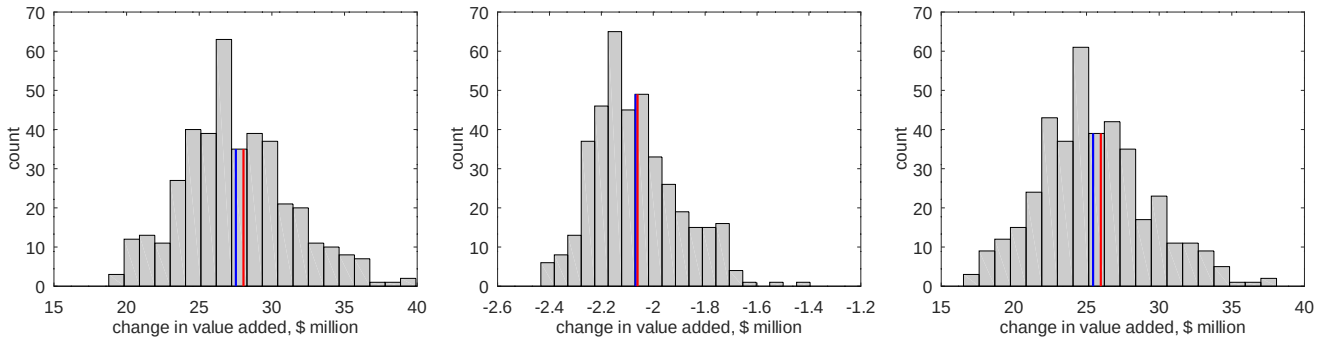


(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

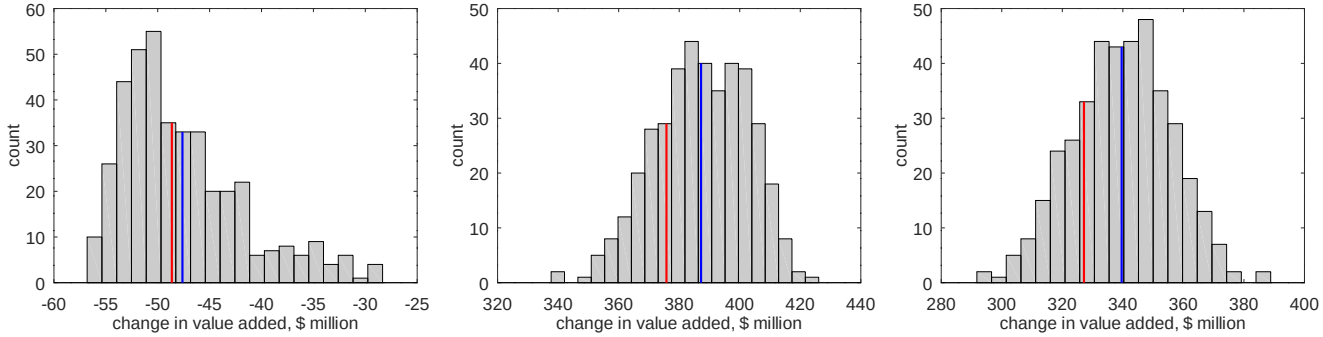


(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

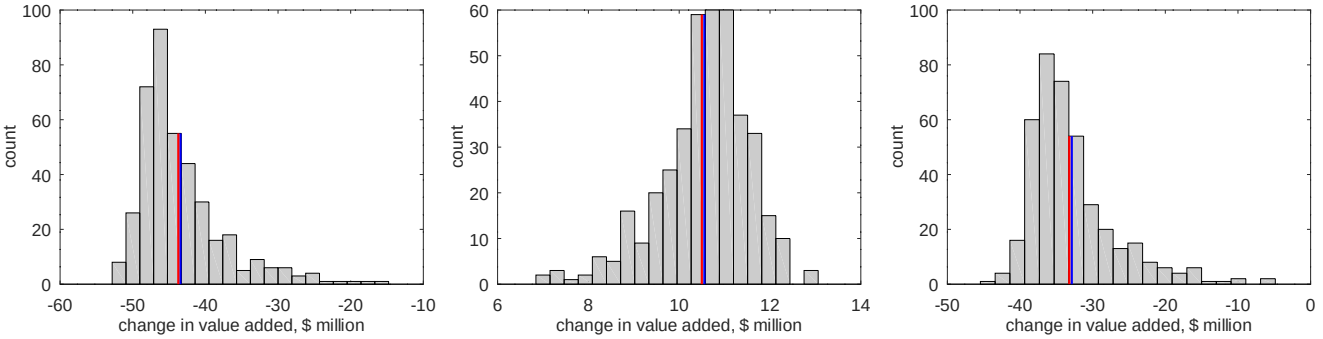
sample mean the result from a simplified (bi-proportional) allocation

Figure 12: Changes in the value added of the "Motor vehicles, trailers and semi-trailers" (D29) industry in the U.S. induced by the bilateral trade contraction effect with Korea: distribution of the results from the Monte Carlo simulations

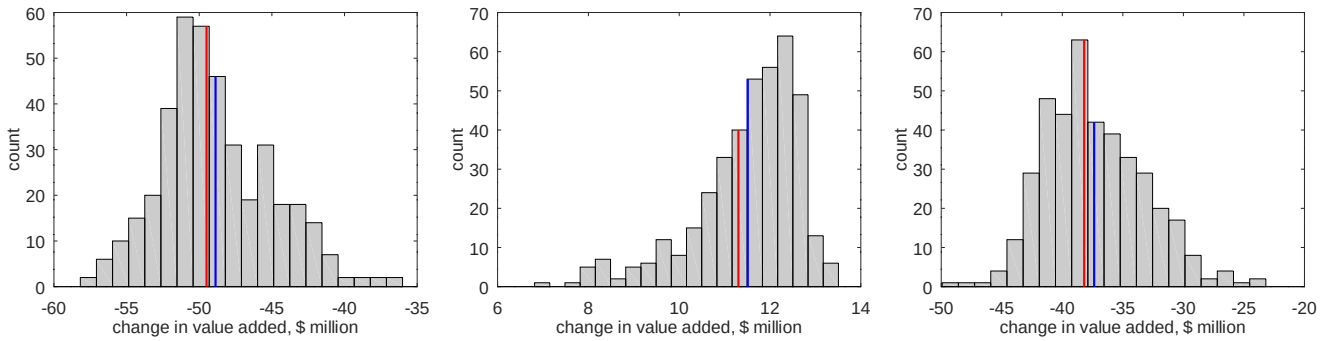
Source: OECD ICIO tables (2018 release), author's calculations.



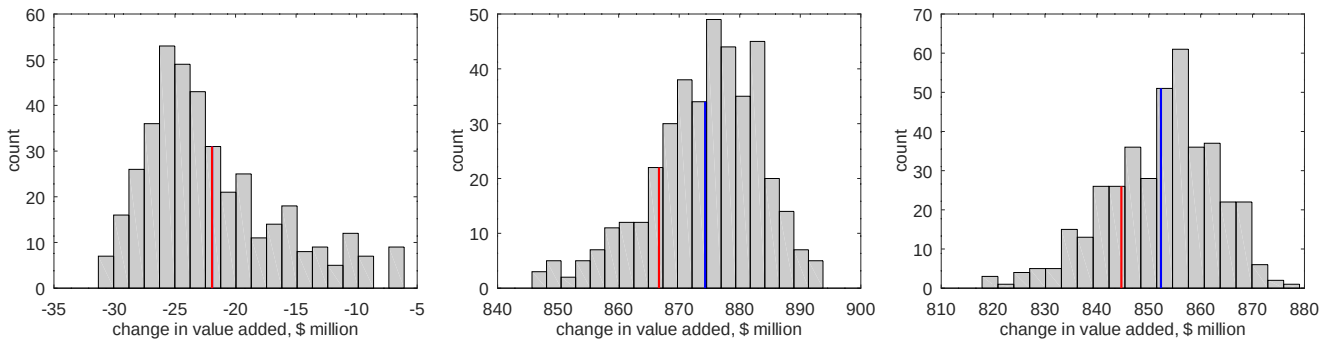
(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012



(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013



(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

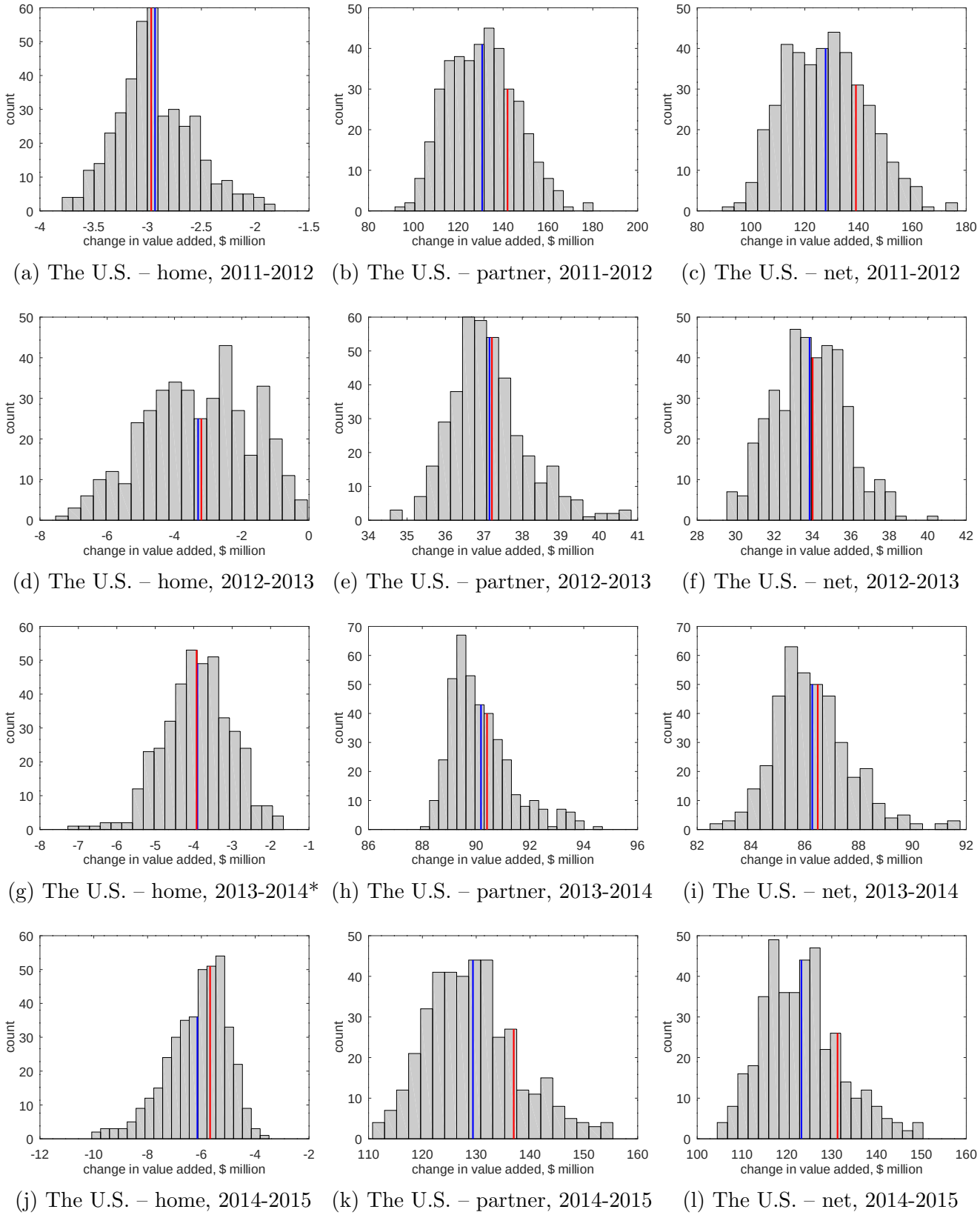


(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 13: Changes in the value added of the "Financial and insurance activities" (D64T66) industry in the U.S. induced by the bilateral trade creation effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

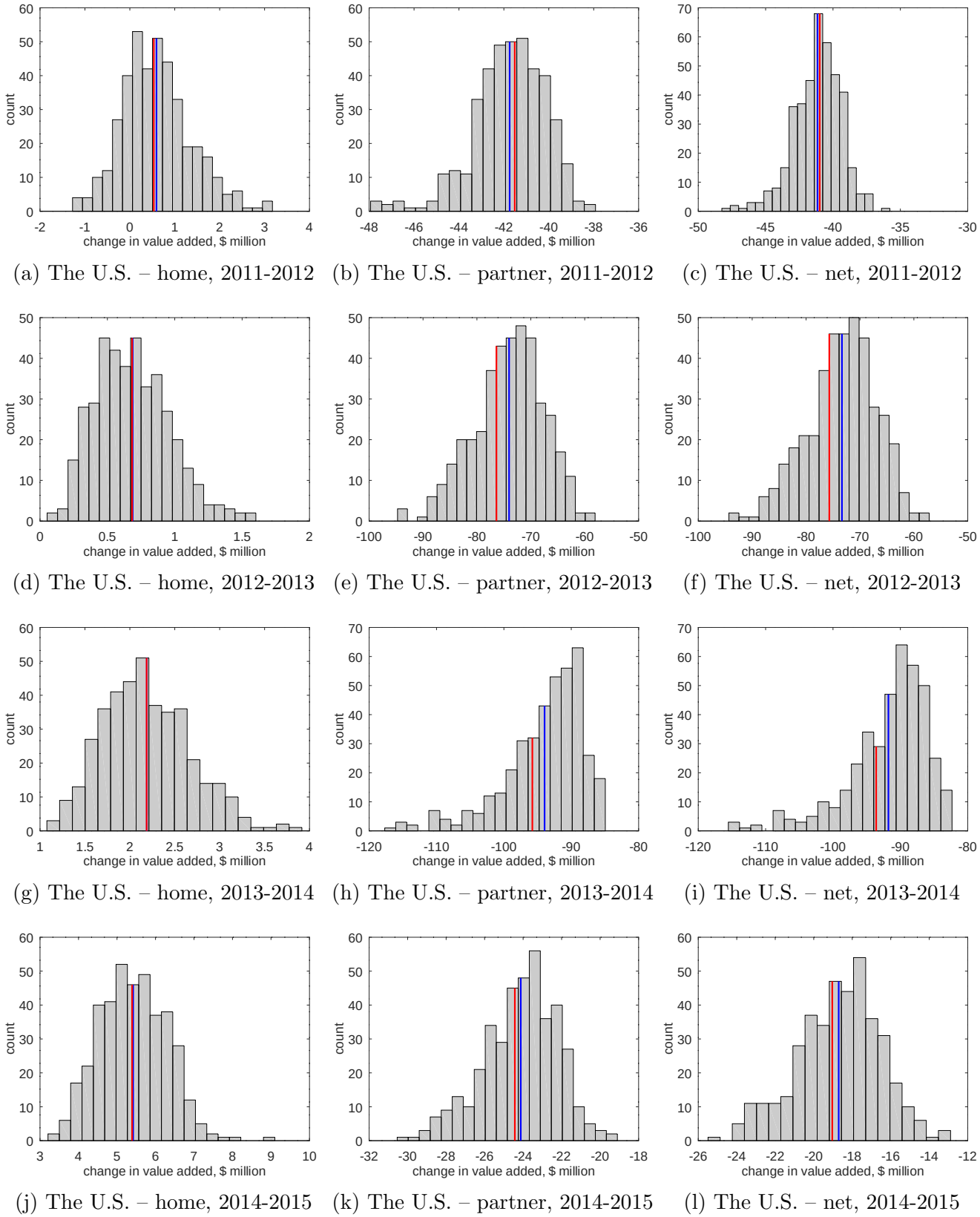
(g) The U.S. – home, 2013-2014* (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 14: Changes in the value added of the "Financial and insurance activities" (D64T66) industry in the U.S. induced by the bilateral trade diversion (*in*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

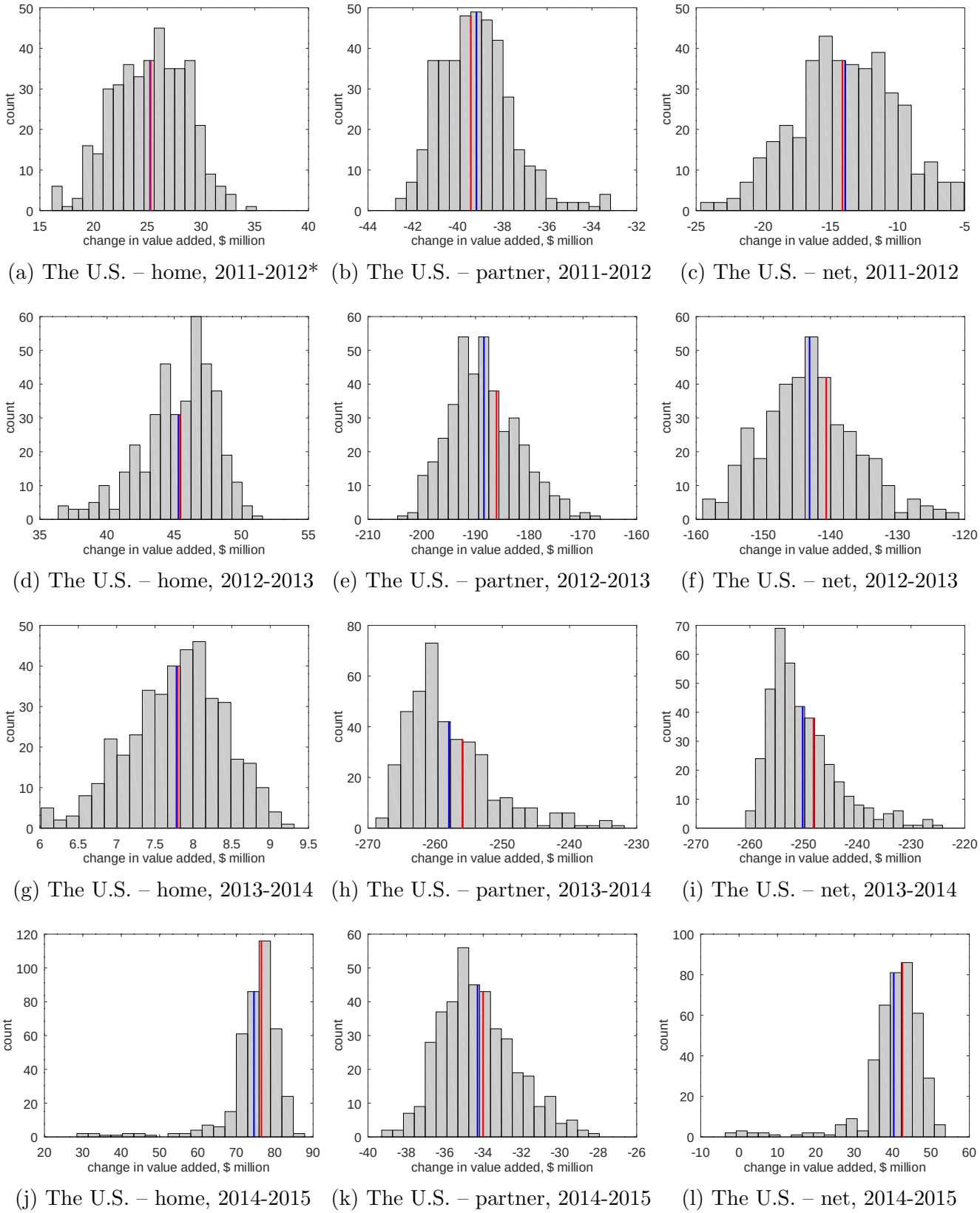
(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

Figure 15: Changes in the value added of the "Financial and insurance activities" (D64T66) industry in the U.S. induced by the bilateral trade diversion (*out*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012* (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

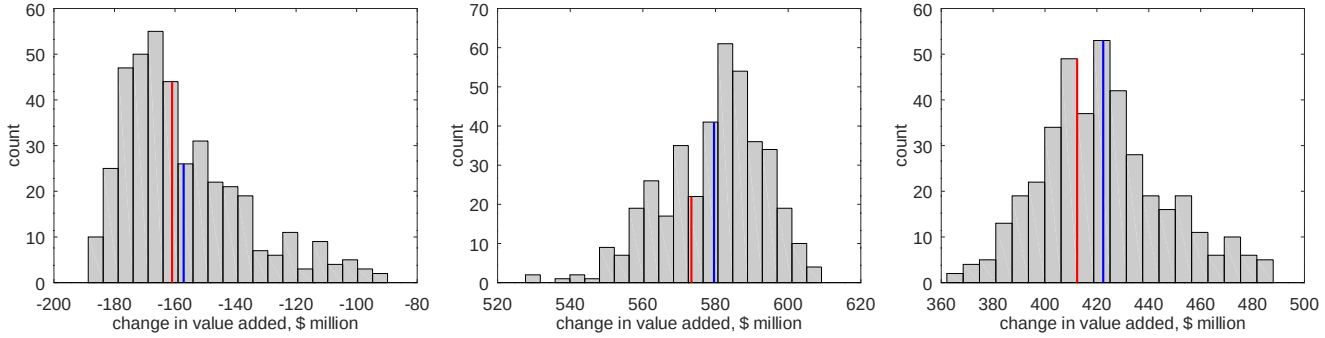
(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

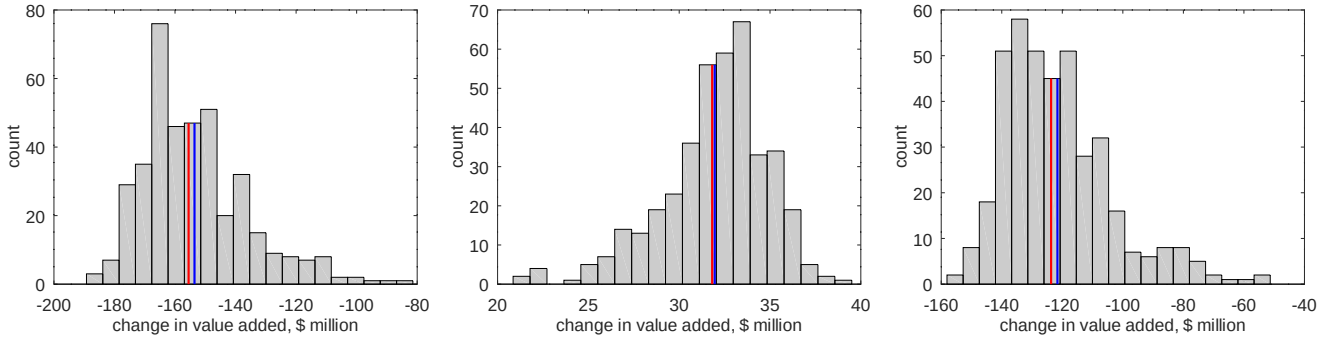
sample mean the result from a simplified (bi-proportional) allocation

Figure 16: Changes in the value added of the "Financial and insurance activities" (D64T66) industry in the U.S. induced by the bilateral trade contraction effect with Korea: distribution of the results from the Monte Carlo simulations

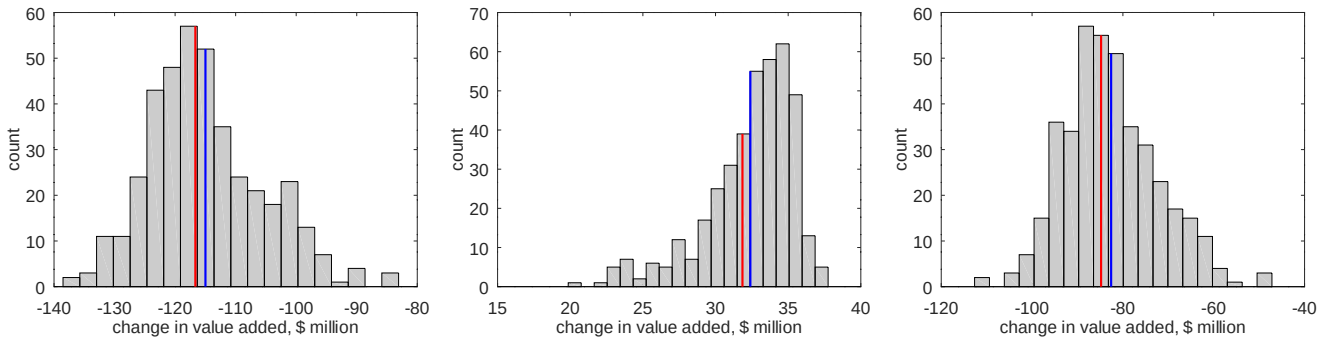
Source: OECD ICIO tables (2018 release), author's calculations.



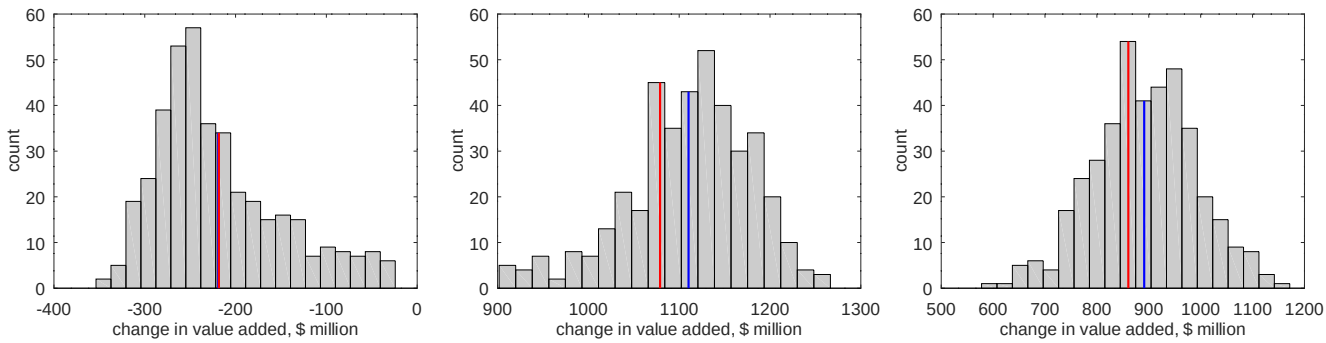
(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012



(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013



(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

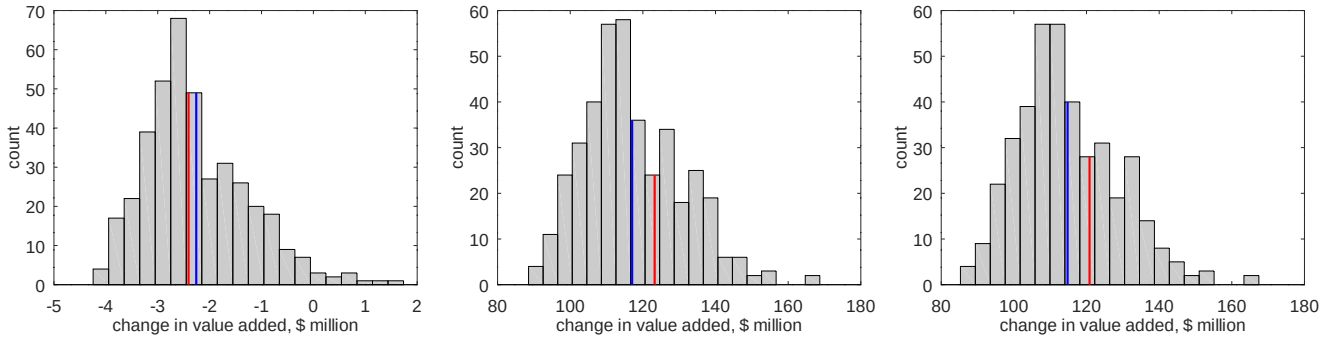


(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

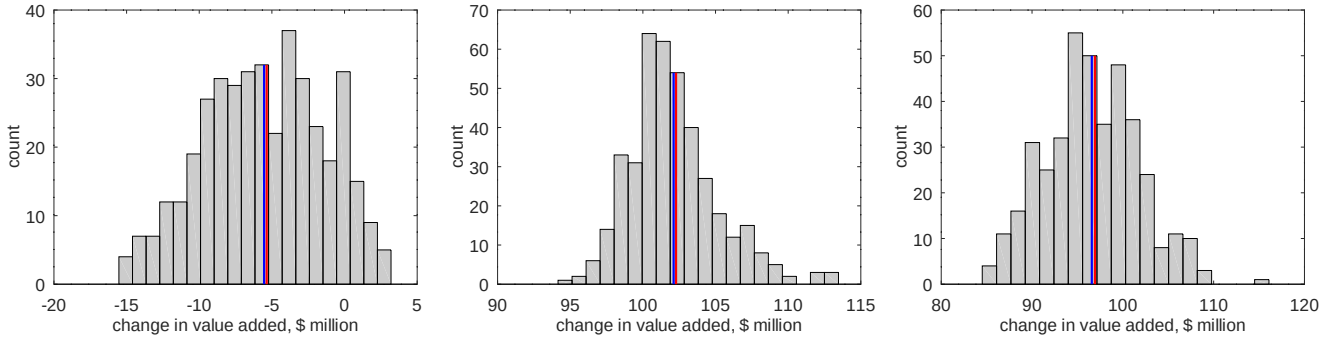
sample mean the result from a simplified (bi-proportional) allocation

Figure 17: Changes in the value added of the "Other business sector services" (D69T82) industry in the U.S. induced by the bilateral trade creation effect with Korea: distribution of the results from the Monte Carlo simulations

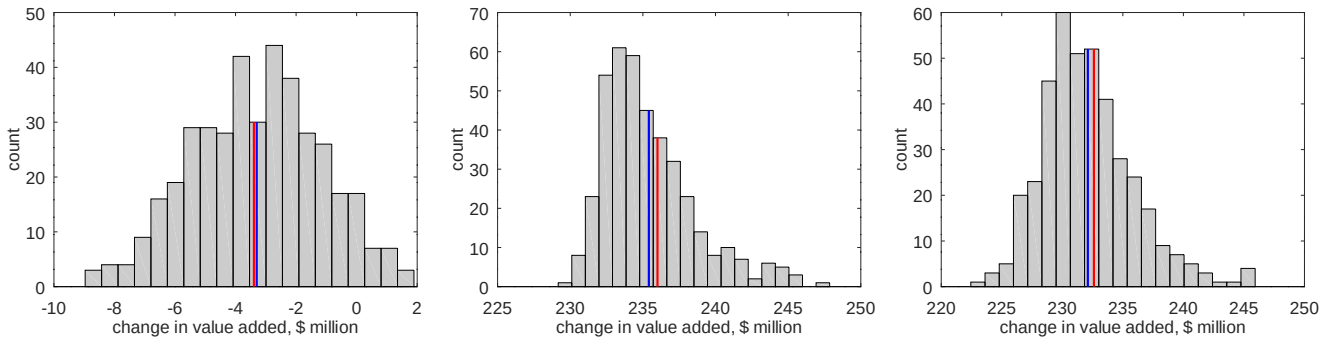
Source: OECD ICIO tables (2018 release), author's calculations.



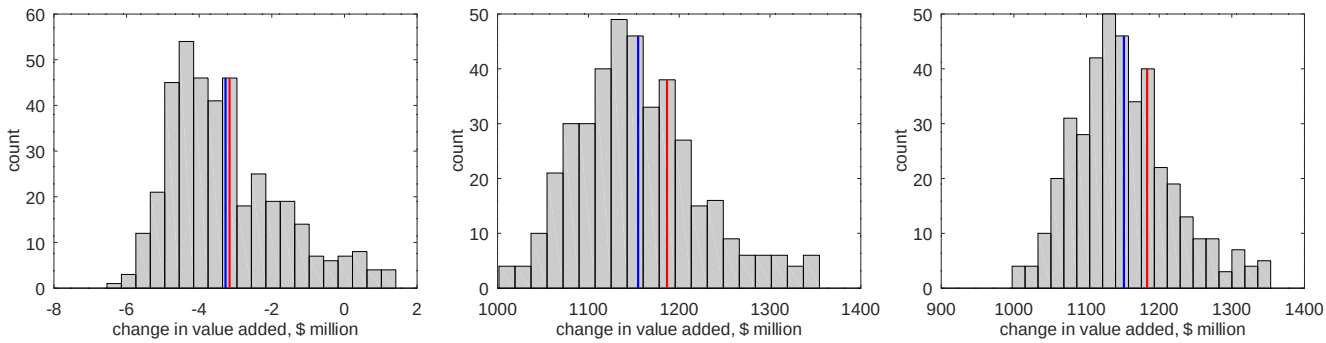
(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012



(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013



(g) The U.S. – home, 2013-2014* (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

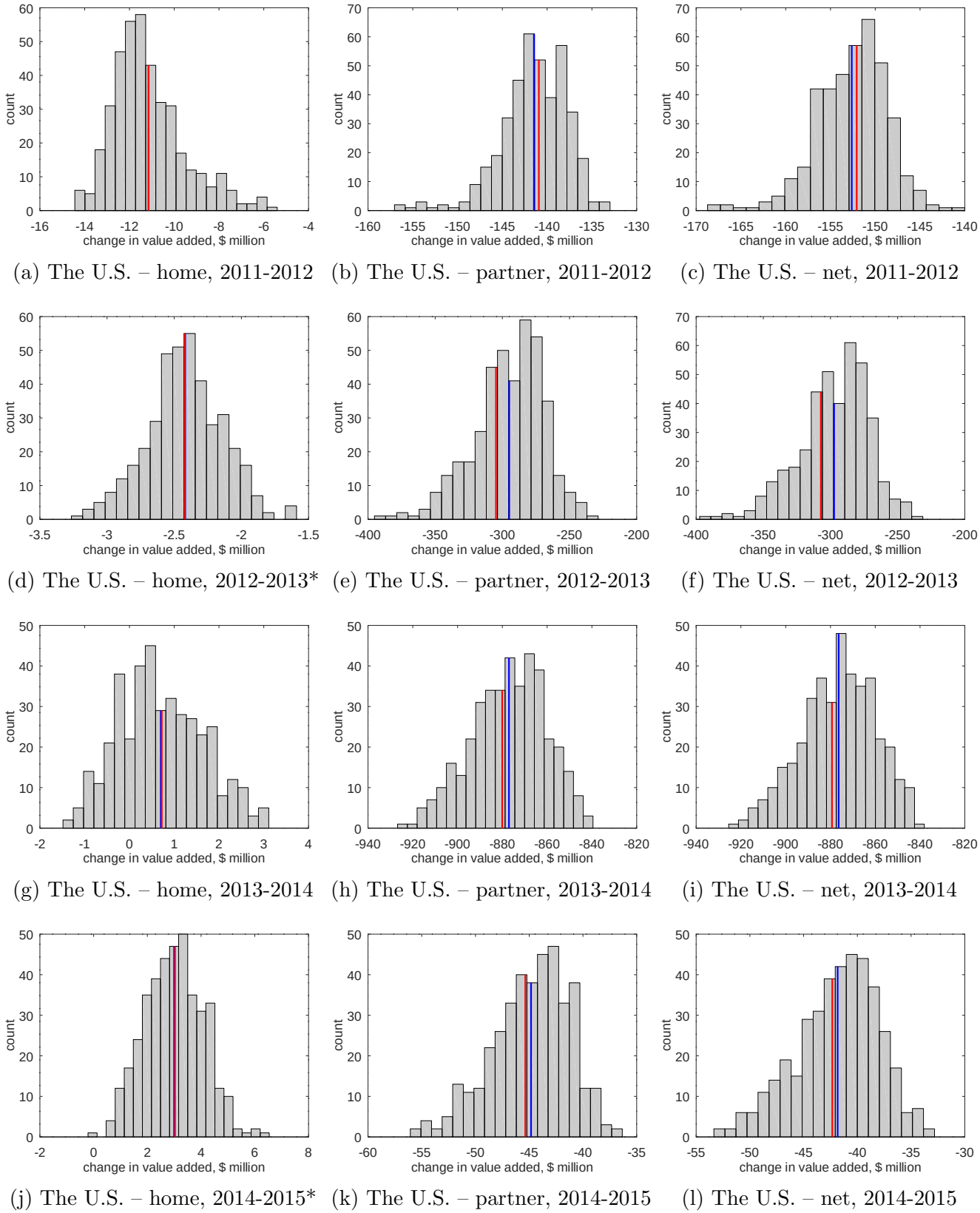


(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

sample mean the result from a simplified (bi-proportional) allocation

Figure 18: Changes in the value added of the "Other business sector services" (D69T82) industry in the U.S. induced by the bilateral trade diversion (*in*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

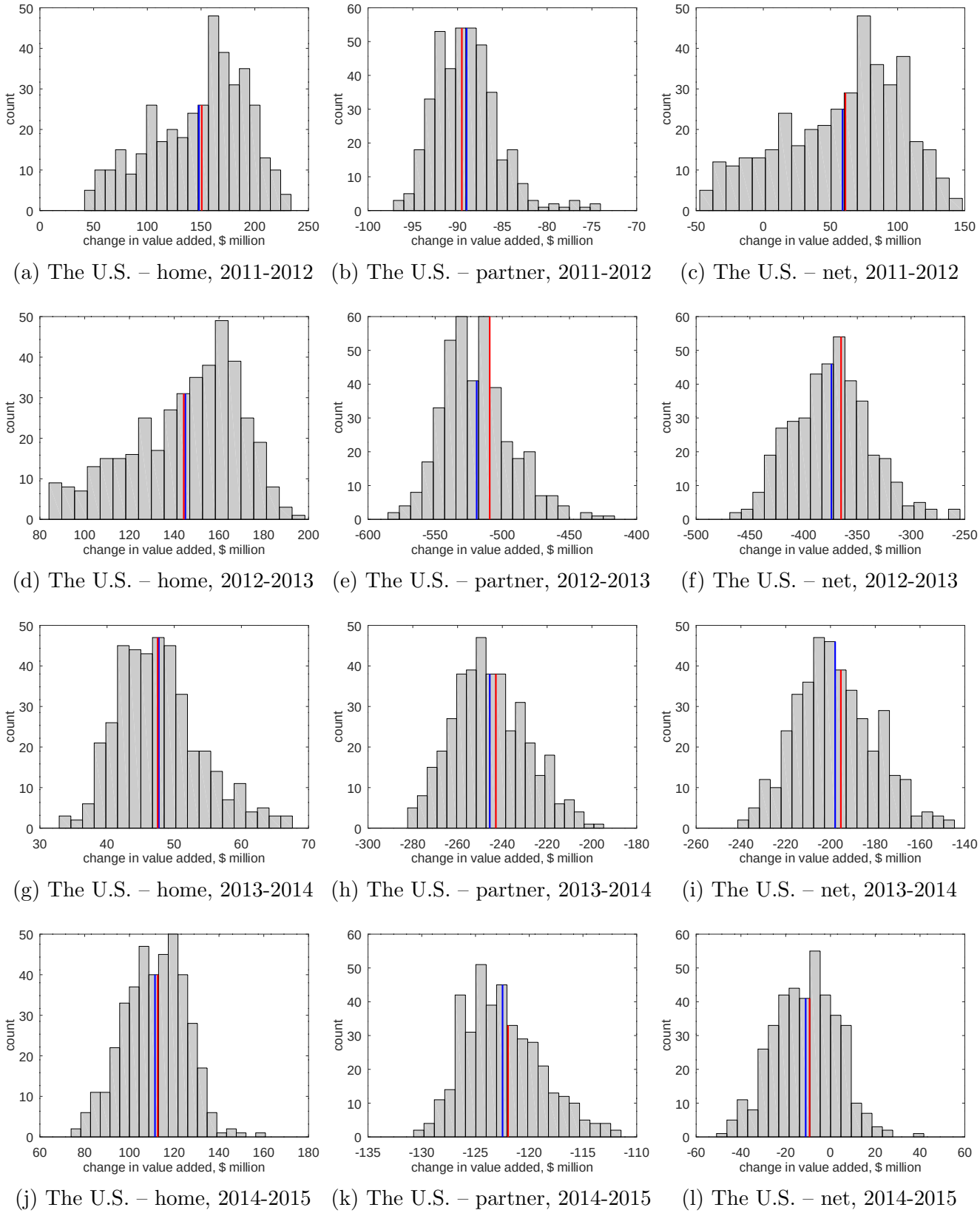
(d) The U.S. – home, 2012-2013* (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015* (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

Figure 19: Changes in the value added of the "Other business sector services" (D69T82) industry in the U.S. induced by the bilateral trade diversion (*out*) effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.



(a) The U.S. – home, 2011-2012 (b) The U.S. – partner, 2011-2012 (c) The U.S. – net, 2011-2012

(d) The U.S. – home, 2012-2013 (e) The U.S. – partner, 2012-2013 (f) The U.S. – net, 2012-2013

(g) The U.S. – home, 2013-2014 (h) The U.S. – partner, 2013-2014 (i) The U.S. – net, 2013-2014

(j) The U.S. – home, 2014-2015 (k) The U.S. – partner, 2014-2015 (l) The U.S. – net, 2014-2015

Figure 20: Changes in the value added of the "Other business sector services" (D69T82) industry in the U.S. induced by the bilateral trade contraction effect with Korea: distribution of the results from the Monte Carlo simulations

Source: OECD ICIO tables (2018 release), author's calculations.