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Studies Reveal Consensus: Trade Flows During “Free Trade” Era Have Exacerbated U.S. Income Inequality

Recent Studies: Trade’s Contribution to Inequality Has Increased During Era of NAFTA-style Trade Deals and Is Likely to Increase Further

U.S. income inequality has jumped to levels not seen since the pre-Depression 1920s, as middle-class wages have stagnated while the incomes of the rich have surged.¹ In 1979, the median weekly wage for U.S. workers in today’s dollars was about \$750. In 2015, it had increased just 23 dollars to \$773 per week. Over the same period, U.S. workers’ productivity doubled.² Meanwhile, the richest 10 percent in the United States are now taking half of the economic pie, while the top 1 percent is taking more than one fifth. Wealthy individuals’ share of national income was stable for the first several decades after World War II, but started increasing in the early 1980s, and then rose even faster in the era of the North American Free Trade Agreement (NAFTA), the World Trade Organization (WTO) and various NAFTA-expansion “Free Trade Agreements” (FTAs). From 1981 until the establishment of NAFTA, the WTO and the U.S. FTAs, the income share of the richest 10 percent increased 1.3 percent each year. In the first six years of NAFTA and the WTO, this inequality increase rate doubled, with the top 10 percent gaining 2.6 percent more of the national income share each year (from 1994 through 2000). Since then, the income disparity has increased even further.³

Since 1941 standard economic theory has held that trade liberalization is likely to contribute to greater income inequality in developed countries like the United States.⁴ As direct competition with low-wage labor abroad puts downward pressure on middle-class wages, the profits of multinational firms rise, and the income gap between the rich and everyone else widens. NAFTA-style deals only exacerbate this inequality-spurring effect by creating a selective form of “free trade” in goods that non-professional workers produce while extending monopoly protections – the opposite of free trade – for certain multinational firms (e.g. patent protections for pharmaceutical corporations).⁵

In the early 1990s, as U.S. income inequality soared amid the enactment of U.S. “free trade” deals, a spate of economic studies put the theory to the test, aiming to determine the relative contribution of trade flows to the rise in U.S. income inequality. **The result was an academic consensus that trade flows had, in fact, contributed to rising U.S. income inequality. The only debate was *the extent* of trade’s role**, with most studies estimating that between 10 and 40 percent of the rise in inequality during the 1980s and early 1990s stemmed from trade flows, as indicated in the table below.⁶

1990s Studies on Trade's Impact on U.S. Income Inequality		
Author(s)	Year of Study	Portion of Inequality Increase Attributed to Trade
Borjas, Freeman, Katz	1997	5%
Lawrence	1996	9%
Borjas and Ramey	1993	10%
Cooper	1994	10%
Krugman	1995	10%
Baldwin and Cain	1994	9-14%
Leamer	1994	20%
Cline	1997	39%
Karoly and Klerman	1994	55-141%
Wood	1994	100%

Status Quo Trade Deals Increase Inequality by Depressing Middle-Class Wages

U.S. FTAs have contributed to the historic rise in U.S. income inequality primarily by exerting downward pressure on middle-class wages. Status quo trade deals have forced U.S. workers to compete directly with low-wage workers in countries with lax or nonexistent labor protections, while offering special protections to U.S. firms that offshore their production to those countries.⁷ The predictable result has been the loss of U.S. jobs, primarily in higher-paying manufacturing sectors.

Of course, most workers who lose their jobs to imports or offshoring eventually find new work. But as manufacturing jobs have become scarcer, many trade-displaced workers have been forced to take lower-paying jobs in non-offshorable service sectors. A recent National Bureau of Economic Research study concludes, “offshoring to low wage countries and imports [are] both associated with wage declines for U.S. workers. We present evidence that **globalization has led to the reallocation of workers away from high wage manufacturing jobs into other sectors and other occupations, with large declines in wages among workers who switch...**”⁸ Indeed, according to the U.S. Bureau of Labor Statistics, about two out of every five displaced manufacturing workers who were rehired in 2016 experienced a wage reduction. About one out of every four took a pay cut of greater than 20 percent.⁹ For the median manufacturing worker earning more than \$38,000 per year, this meant an annual loss of at least \$7,700.¹⁰

But the wage losses are not limited to those workers who actually lose their jobs under trade deals. When manufacturing workers are displaced and seek new jobs, they add to the supply of U.S. workers available for non-offshorable, non-professional jobs in hospitality, retail, health care and more. **As increasing numbers of trade-displaced workers have joined the glut of workers competing for these non-offshorable jobs, real wages have actually been declining in these growing sectors.**¹¹ The downward pressure on wages thus spreads to much of the middle class.

Meanwhile, status quo trade deals have eroded U.S. workers’ power to reverse the middle-class wage stagnation via collective bargaining. In the past, U.S. workers represented by unions were able to bargain for their fair share of economic gains generated by productivity increases.¹² But

the foreign investor protections in today's "trade" agreements, by facilitating the offshoring of production, alter the power dynamic between workers and their employers. **NAFTA-style deals boost firms' ability to suppress workers' requests for wage increases with credible threats to offshore their jobs.** For instance, a study for the North American Commission on Labor Cooperation – the body established in the labor side agreement of NAFTA – showed that after passage of NAFTA, as many as 62 percent of U.S. union drives faced employer threats to relocate abroad. After NAFTA took effect, the factory shut-down rate following successful union certifications tripled.¹³

Some analysts argue that technology-related efficiency gains also spur U.S. manufacturing job loss and exert downward pressure on middle-class wages, in attempt to diminish the role of trade policy in exacerbating U.S. income inequality.¹⁴ But recent studies indicate that the role of technology has been overstated. A 2013 National Bureau of Economic Research study on the U.S. job impacts of both technology and trade finds "no net employment decline" from technological change from 1990 to 2007 while finding a strong correlation between increasing import competition from China and "significant falls in employment, particularly in manufacturing and among non-college workers."¹⁵ In another 2013 study, **Federal Reserve economists find "limited support" for the notion that technological change explains U.S. workers' declining share of national income, while identifying increasing import competition and offshoring as "a leading potential explanation."**¹⁶ An earlier study by International Monetary Fund economists similarly concludes, "Among developed countries...the adverse impact of globalization [on income inequality] is somewhat larger than that of technological progress."¹⁷ Regardless of how much importance should be ascribed to technological change, the importance of status quo trade in spurring income inequality is a consistent finding of the panoply of studies cited above and below. Since Congress actually has a say over trade policy, why would we not push for a new trade policy that fosters rather than erodes middle-class wages and diminishes rather than widens the yawning income gap?

Pro-FTA Think Tank: Trade Responsible for 39 Percent of Inequality Growth

In one of the more frequently cited studies from the 1990s – a 1997 report published by the pro-"free trade" Institute for International Economics (now the Peterson Institute for International Economics)¹⁸ – author William Cline estimated that trade was responsible for a 7 percent gross increase in U.S. wage inequality during a time period in which wage inequality rose by a total of 18 percent – meaning that **the trade impact on U.S. wage inequality amounted to 39 percent of observed inequality growth.**

Cline used an economic model to calculate that trade liberalization, trade costs and offshoring were responsible for an estimated 7 percent gross increase in the wage inequality that had occurred from 1973 to 1993 (i.e. a 7 percent rise in the ratio of the wages earned by those with some college education compared to the wages earned by those with a high school education or lower).¹⁹ Cline reported an 18 percent total wage inequality increase during this time period.²⁰ Dividing the 7 percent trade-prompted inequality increase by the 18 percent total inequality increase amounts to a 39 percent contribution of trade to the rise in inequality.

In his study, Cline noted that trade was just one of several factors contributing to the rise in inequality, and that trade's 7 percent gross contribution was less than 10 percent of the total estimated *gross* contributions of all inequality-exacerbating factors.²¹ While Cline attempted to downplay the results of his own model (trade's estimated 39 percent contribution to the net increase in inequality) and instead emphasize trade's smaller share of the total estimated *gross* contributions to inequality, Cline himself admitted that this interpretation of the results was not "typical[]." ²² Indeed, in his review of other scholars' studies listed in the above table, Cline himself reported the primary result of each study by dividing the estimated trade-prompted gross inequality increase by the observed net inequality increase – the same method used to arrive at the 39 percent estimate using the data from Cline's study.²³ This standard approach makes sense, because if trade flows had not spurred a 7 percent increase in U.S. wage inequality (to use Cline's study), the total observed rise in inequality indeed would have been about 39 percent lower.

Further, while Cline's study named several non-trade factors contributing to the rise in income inequality, the factor with the largest substantiated gross contribution to inequality was trade. Other inequality-exacerbating factors included increased immigration (an estimated 2 percent contribution), a reduced real minimum wage (an estimated 5 percent contribution) and de-unionization (an estimated 3 percent contribution – one arguably influenced by trade deals that enable the offshoring threats used to counter union drives).²⁴ After accounting for all of these factors, Cline was left with a missing 67 percent gross contribution to wage inequality (required to arrive at the observed 18 percent *net* inequality increase after taking into account downward pressures on inequality).²⁵ Cline then "arbitrarily" assigned half of this mystery category to "skill biased technical change" and kept the other half as "unexplained."²⁶ While the resulting role allocated to technological change significantly exceeded that found for trade, the allocation was not substantiated by any economic model or calculation, leaving trade as the study's largest inequality-exacerbating factor backed up by data.

Recent Studies Reveal Rising Impact of Trade on U.S. Income Inequality

More recent studies have concluded that **trade's role in exacerbating U.S. income inequality has likely grown since the 1990s**, as U.S. imports from lower-wage countries, and U.S. job offshoring to those countries, have risen dramatically amid the implementation of NAFTA, the WTO and a series of NAFTA expansion pacts, impacting an increasing swath of middle-class jobs. Further, an array of studies now project future increases in the offshoring of U.S. jobs, suggesting that **even under current U.S. trade policy, trade flows will soon be responsible for an even greater share of rising U.S income inequality.**

The China Shock: Learning from Labor Market Adjustment to Large Changes in Trade;
David H. Autor, David Dorn and Gordon H. Hanson; the National Bureau of Economic Research; January 2016

This economic study measures the impact of trade shocks on the U.S. economy and finds that labor adjustment after a trade shock is far from "frictionless." It specifically looks at China's entry into the WTO, which disrupted the near consensus that widespread gains in lower consumer prices and efficiency gains from trade liberalization outweigh the temporary job loss

suffered by those displaced by imports. In addition, the study found that **“low-wage workers [whose company suffers from a trade shock] suffer large differential earnings losses**, as they obtain lower earnings per year both while working at the initial firm and after relocating to new employers.” In contrast, workers in the top income bracket of a company that suffers through a trade shock do not experience a wage reduction relative to their peers working in less trade-exposed industries.

Why are American Workers getting Poorer? China, Trade and Offshoring; *Avraham Ebenstein, Ann Harrison and Margaret McMillan; National Bureau of Economic Research; March 2015*

In this study on trade’s impact on U.S. workers’ wages, the authors conclude: “We find significant effects of globalization, with offshoring to low wage countries and imports both associated with wage declines for US workers. We present evidence that globalization has led to the reallocation of workers away from high wage manufacturing jobs into other sectors and other occupations, with large declines in wages among workers who switch...”²⁷ Running econometric tests on wage and trade data from 1983-2008, the economists find that **a 10 percent increase in an occupation’s exposure to import competition was associated with a more than 15 percent drop in wages for U.S. workers performing somewhat routine tasks** (and a nearly 3 percent wage decline for U.S. workers overall). As many middle-class occupations have faced surging imports from FTA countries, this finding indicates particularly large wage losses for U.S. workers under status quo trade deals. The authors also find statistically significant wage declines associated with the offshoring of U.S. jobs to low-wage countries, particularly in recent years (2000-2008), as offshoring has increased.²⁸ The study controlled for technological change so as to capture the impacts of imports and offshoring alone.²⁹

IV Quantile Regression for Group-level Treatments, with an Application to the Distributional Effects of Trade; *Denis Chetverikov, Bradley Larsen, and Christopher Palmer; National Bureau of Economic Research; March 2015*

This study on the U.S. wage impacts of rising import competition from China from 1990 to 2007 finds that “Chinese import competition affected the wages of low-wage earners more than high-wage earners, **demonstrating how increases in trade can causally exacerbate local income inequality.**” Indeed, the authors’ econometric tests find that for the lower third of U.S. workers by income, the downward pressure on wages from the import competition was twice as strong as the average effect.³⁰

The Decline of the U.S. Labor Share; *Michael W. L. Elsby, Bart Hobijn and Aysegul Sahin; The Brookings Institution; Fall 2013*

Economists at the Federal Reserve and University of Edinburgh used this study to identify why U.S. workers’ share of national income has been steadily declining over the past couple decades. After a battery of econometric tests, the authors find “limited support” for the theory that technological change primarily explains middle-class workers’ diminishing slice of the economic pie. Instead, they conclude, “our analysis identifies offshoring of the labor-intensive component of the U.S. supply chain as a leading potential explanation of the decline in the U.S. labor share over the past 25 years.”³¹ Indeed, their findings “suggest that increases in the import exposure of U.S. businesses can account for 3.3 percentage points of the 3.9 percentage point decline in the

U.S. payroll share over the past quarter century.”³² That is, **increases in offshoring and import competition since about the dawn of the NAFTA era are associated with 85 percent of the observed decline in U.S. workers’ share of national income** – a result that the economists find “striking,” leading them to suggest that if the trade status quo continues, “the labor share will continue to decline.”³³

Using Standard Models to Benchmark the Costs of Globalization for American Workers without a College Degree; *Josh Bivens; Economic Policy Institute; March 22, 2013*

In this study Josh Bivens, an economist at the Economic Policy Institute, updates an early-1990s model estimate of the impact of trade flows on U.S. income inequality and finds that, using the model’s own conservative assumptions, one third of the increase in U.S. income inequality from 1973 to 2011 was due to trade with low-wage countries.³⁴ More importantly, Bivens finds that the trade-attributable share of the rise in income inequality has increased rapidly since the 1990s as manufacturing imports from low-wage countries have escalated. The data reveal that **while trade spurred 17 percent of the income inequality increase occurring from 1973 to 1995, trade flows were responsible for more than 93 percent of the rise in income inequality from 1995 to 2011 – a period marked by a series of U.S. “free trade” deals.**³⁵ Expressed in dollar terms, Bivens estimates that trade’s inequality-exacerbating impact spelled a \$1,761 loss in wages in 2011 for the average full-time U.S. worker without a college degree.³⁶ Bivens concludes, “various policy decisions that have governed how the American economy is integrated into the global economy have increased the damage done to American workers ... [including] pursuing expanded global integration through trade agreements that carve out protections for corporate investors but not for American workers...”³⁷

Rising Income Inequality: Technology, or Trade and Financial Globalization?; *Florence Jaumotte, Subir Lall, and Chris Papageorgiou; International Monetary Fund; July 2008*

The International Monetary Fund authors find that the rise in income inequality from 1981-2003 in 20 developed countries, including the United States, is *primarily* attributable to trade and financial globalization trends. They conclude that globalization’s contribution to inequality has outweighed the role of technological advancement: **“Among developed countries ... the adverse impact of globalization is somewhat larger than that of technological progress.”**³⁸

Trade and Wages, Reconsidered; *Paul Krugman; The Brookings Institution; Spring 2008*

In a Brookings Institution study, Nobel-winning economist Paul Krugman finds that trade flows likely now account for an even greater degree of U.S. income inequality than that found in a series of studies from the early 1990s, which had already concluded that trade liberalization had a negative, but modest, impact on income inequality in developed countries like the United States. Like Bivens (see above), Krugman notes that U.S. manufacturing imports from low-wage developing countries have grown dramatically in the last two decades, suggesting that the role of trade flows in spurring U.S. income inequality growth is “considerably larger” than before.³⁹ Krugman concludes, **“...there has been a dramatic increase in manufactured imports from developing countries since the early 1990s. And it is probably true that this increase has been a force for greater inequality in the United States and other developed countries.”**⁴⁰

Globalization, American Wages, and Inequality: Past, Present, and Future; *Josh Bivens; Economic Policy Institute; September 6, 2007*

In this report Bivens cites an array of recent economic studies that project that the offshoring of U.S. jobs will increase under current trade policy, suggesting a substantial further rise in the impact of trade flows on U.S. income inequality.⁴¹ For example, Princeton economist and former Council of Economic Advisors member Alan Blinder estimates that about one in every four U.S. jobs, including higher-paying service-sector jobs, could be offshored in the foreseeable future.⁴² While such studies differ in the projected extent of future U.S. job offshorability, all imply an increase in the impact of trade flows on U.S. income inequality. Bivens finds that **the range of projections for increased offshoring suggest a further 74 to 262 percent increase in U.S. income inequality attributable to trade with lower-wage countries, compared to the level seen in 2006.**⁴³ Bivens concludes, “The potential level of redistribution caused by offshoring is vast, and, so should be the policy response.”⁴⁴

TPP-Spurred Inequality Increase Would Have Meant a Pay Cut for 90 Percent of Workers

The Trans-Pacific Partnership (TPP) would have further exacerbated U.S. income inequality by forcing U.S. workers to compete directly with even lower-paid workers abroad while expanding past FTAs’ incentives for firms to offshore middle-class U.S. jobs to low-wage countries. The pact’s investment chapter would have created extraordinary rights and privileges for foreign investors, eliminating many of the usual risks and costs that make firms think twice before relocating abroad.⁴⁵ In addition, the TPP would have placed U.S. workers in direct competition with workers in low-wage TPP member countries like Vietnam, where wages average less than 60 cents an hour,⁴⁶ independent unions are banned, and child labor is rampant.⁴⁷ If the legacy of existing FTAs provides any indication, this uneven playing field would have spurred a surge in imported goods from TPP countries, resulting in more layoffs of middle-class U.S. workers.⁴⁸ Like manufacturing workers displaced under current trade pacts, many workers who would have lost their jobs to TPP-spurred offshoring or imports would have been forced to compete for lower-paying service sector jobs, putting further downward pressure on middle-class wages and fueling greater income inequality.

Defenders of the TPP sometimes acknowledged the pact likely would have further constrained middle-class wages, but claimed that the deal would have produced economic gains, largely in the form of cheaper imported consumer goods, that would have outweighed those costs for most U.S. workers. Economists at the Center for Economic and Policy Research (CEPR) put that theory to the test, using the results of a study by the pro-TPP Peterson Institute for International Economics that, despite using overoptimistic assumptions, projected the TPP would result in tiny economic gains in 2025. CEPR assessed whether those projected gains would counterbalance increased downward pressure on middle-class wages from the TPP, applying the empirical evidence on how recent trade flows have contributed to growing U.S. income inequality. Even with the most conservative estimate of trade’s contribution to inequality from the studies cited above (that trade is responsible for just 10 percent of the recent rise in income inequality), they found that the losses from projected TPP-produced inequality would have wiped out the tiny projected gains for the median U.S. worker. With the still-conservative estimate that trade is responsible for just 15 percent of the recent rise in U.S. income inequality, the CEPR study found that the TPP would have meant wage losses for all but the richest 10 percent of U.S.

workers.⁴⁹ That is, for any workers making less than \$90,060 per year (the current 90th percentile wage), the TPP would have meant a pay cut.⁵⁰

ENDNOTES

¹ Thomas Piketty and Emmanuel Saez, “The Evolution of Top Incomes: A Historical and International Perspective,” National Bureau of Economic Research, Paper 11955, January 2006, numbers updated through 2015 in a June 2016 extract. Available at: <http://www.econ.berkeley.edu/~saez/>.

² Median wage data for 1979-2015: U.S. Bureau of Labor Statistics, “Weekly and Hourly Earnings Data from the Current Population Survey,” Series ID LEU0252881600, extracted December 2016. Available at: <http://data.bls.gov>. Productivity data: U.S. Bureau of Labor Statistics, Major Sector Productivity and Costs index, Series ID PRS88003093, extracted December 2016. Available at: <http://data.bls.gov>.

³ Thomas Piketty and Emmanuel Saez, “The Evolution of Top Incomes: A Historical and International Perspective,” National Bureau of Economic Research, Paper 11955, January 2006, numbers updated through 2015 in a June 2016 extract. Available at: <http://www.econ.berkeley.edu/~saez/>.

⁴ See Wolfgang F. Stolper and Paul A. Samuelson, “Protection and Real Wages,” *The Review of Economic Studies*, Vol. 9, No. 1 (November 1941), at 58-73.

⁵ See Dean Baker, “Want ‘free trade’? Open the medical and drug industry to competition,” *The Guardian*, November 11, 2013. Available at: <http://www.theguardian.com/commentisfree/2013/nov/11/support-real-free-trade-medical-costs>.

⁶ Most of these studies were summarized by William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 35-150 (see summary table at 140-143). The studies cited here are those that have produced numerical estimates of trade’s contribution to the rise in wage inequality. Other studies producing non-numerical assessments have produced an equally varied assessment of trade’s role, from “minimal” to “very high,” as summarized by Cline. Cline did not include the Lawrence study: Robert Z. Lawrence, *Single World, Divided Nations?: International Trade and the OECD Labor Markets* (Washington, D.C.: Brookings Institution, 1996), at 68-71.

⁷ See Public Citizen, “Table of Foreign Investor-State Cases and Claims under NAFTA and Other U.S. ‘Trade’ Deals,” June 2015. Available at: <http://www.citizen.org/documents/investor-state-chart.pdf>.

⁸ Avraham Ebenstein, Ann Harrison and Margaret McMillan, “Why Are American Workers Getting Poorer? China, Trade and Offshoring,” National Bureau of Economic Research, Working Paper 21027, March 2015, at Abstract. Available at: <http://www.nber.org/papers/w21027.pdf>.

⁹ U.S. Bureau of Labor Statistics, “Displaced Workers Summary,” Table 7, U.S. Department of Labor, August 25, 2016. Available at: <http://www.bls.gov/news.release/disp.nr0.htm>.

¹⁰ U.S. Bureau of Labor Statistics, “May 2015 National Industry-Specific Occupational Employment and Wage Estimates: Sectors 31, 32, and 33 – Manufacturing,” Occupational Employment Statistics, U.S. Department of Labor, accessed December 20, 2016. Available at: http://www.bls.gov/oes/current/naics2_31-33.htm#00-0000.

¹¹ Bureau of Labor Statistics, Current Employment Statistics survey, series ID CEU7072000003, accommodation and food services industry, extracted June 11, 2015. Available at: <http://www.bls.gov/ces/>.

¹² Dean Baker, *The United States Since 1980*, (Cambridge: Cambridge University Press, 2007), at 35-45.

¹³ Kate Bronfenbrenner, “The Effects of Plant Closing or Threat of Plant Closing on the Right of Workers to Organize,” Cornell University, Prepared for North American Commission for Labor Cooperation, 1996, at 7. Available at: <http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1000&context=intl>.

¹⁴ See, for example, James Sherk, “Technology Explains Drop in Manufacturing Jobs,” The Heritage Foundation, October 12, 2010. Available at: <http://www.heritage.org/research/reports/2010/10/technology-explains-drop-in-manufacturing-jobs>.

¹⁵ David H. Autor, David Dorn and Gordon H. Hanson, “Untangling Trade and Technology: Evidence from Local Labor Markets,” National Bureau of Economic Research, Working Paper 18938, April 2013, at Abstract. Available at: <http://www.nber.org/papers/w18938.pdf>.

¹⁶ Michael W. L. Elsby, Bart Hobijn and Aysegul Sahin, “The Decline of the U.S. Labor Share,” Brookings Papers on Economic Activity, Fall 2013, at 1, 43 and 47. Available at: http://www.brookings.edu/~media/Projects/BPEA/Fall%202013/2013b_elsby_labor_share.pdf.

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- ¹⁷ Florence Jaumotte, Subir Lall and Chris Papageorgiou, “Rising Income Inequality: Technology, or Trade and Financial Globalization?” International Monetary Fund, Working Paper 08/185, July 2008, at 14. Available at: <http://www.imf.org/external/pubs/ft/wp/2008/wp08185.pdf>.
- ¹⁸ William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997).
- ¹⁹ The 7 percent estimate is actually the lower of two estimates produced by the model in Cline’s report. Using the sectoral elasticities of the original model, Cline found that trade flows contributed to a 10 percent increase the wage ratio, or 56 percent of the observed increase in wage inequality. It is after narrowing the gap between sectoral elasticities in a sensitivity test that Cline produced the 7 percent estimate. William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 232.
- ²⁰ William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 254.
- ²¹ William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 268. Cline estimated that an increase in the supply of skilled labor relative to unskilled labor should have accounted for a 40 percent gross *decrease* in the skilled/unskilled wage ratio during the time period of study. Given the observed 18 percent net *increase* in the wage ratio, Cline calculated that a 97 percent gross increase must have been the total effect from all inequality-exacerbating factors (e.g. trade, immigration, deunionization, etc.). The unchained sum of the inequality contribution of all these factors amounted to 75 percentage points. See Cline’s summary table on page 264 for more information.
- ²² William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 145-146.
- ²³ William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 35-150 (see summary table at 140-143).
- ²⁴ William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 264.
- ²⁵ William R. Cline, *Trade and Income Distribution* (Washington, D.C.: Institute for International Economics, 1997), at 268.
- ²⁶ William Cline, “Trade and Income Distribution: The Debate and New Evidence,” Peterson Institute for International Economics, Policy Brief 99-7, September 1999. Available at: <http://www.iie.com/publications/pb/pb.cfm?ResearchID=94>. It should be noted that Cline’s decision to assign half of the unexplained gross inequality contribution to skill biased technical change is more prudent than other studies that have attributed 100 percent of unexplained inequality contributions to this factor without serious substantiation. Still, an arbitrary assignment of any significant portion of such a large unexplained category to any factor seems inappropriate without more rigorous, data-based justification.
- ²⁷ Avraham Ebenstein, Ann Harrison and Margaret McMillan, “Why Are American Workers Getting Poorer? China, Trade and Offshoring,” National Bureau of Economic Research, Working Paper 21027, March 2015, at Abstract. Available at: <http://www.nber.org/papers/w21027.pdf>.
- ²⁸ Avraham Ebenstein, Ann Harrison and Margaret McMillan, “Why Are American Workers Getting Poorer? China, Trade and Offshoring,” National Bureau of Economic Research, Working Paper 21027, March 2015, at 14-17. Available at: <http://www.nber.org/papers/w21027.pdf>.
- ²⁹ Avraham Ebenstein, Ann Harrison and Margaret McMillan, “Why Are American Workers Getting Poorer? China, Trade and Offshoring,” National Bureau of Economic Research, Working Paper 21027, March 2015, at 7. Available at: <http://www.nber.org/papers/w21027.pdf>.
- ³⁰ Denis Chetverikov, Bradley Larsen, and Christopher Palmer, “IV Quantile Regression for Group-level Treatments, with an Application to the Distributional Effects of Trade,” National Bureau of Economic Research, Working Paper 21033, March 2015, at 15. Available at: <http://www.nber.org/papers/w21033.pdf>.
- ³¹ Michael W. L. Elsby, Bart Hobijn and Aysegul Sahin, “The Decline of the U.S. Labor Share,” Brookings Papers on Economic Activity, Fall 2013, at 1. Available at: http://www.brookings.edu/~media/Projects/BPEA/Fall%202013/2013b_elsby_labor_share.pdf.
- ³² Michael W. L. Elsby, Bart Hobijn and Aysegul Sahin, “The Decline of the U.S. Labor Share,” Brookings Papers on Economic Activity, Fall 2013, at 43. Available at: http://www.brookings.edu/~media/Projects/BPEA/Fall%202013/2013b_elsby_labor_share.pdf.
- ³³ Michael W. L. Elsby, Bart Hobijn and Aysegul Sahin, “The Decline of the U.S. Labor Share,” Brookings Papers on Economic Activity, Fall 2013, at 4 and 47. Available at: http://www.brookings.edu/~media/Projects/BPEA/Fall%202013/2013b_elsby_labor_share.pdf.
- ³⁴ Josh Bivens, “Using Standard Models to Benchmark the Costs of Globalization for American Workers without a College Degree,” Economic Policy Institute, Briefing Paper #354, March 22, 2013, at 6. Available at:

<http://s3.epi.org/files/2013/standard-models-benchmark-costs-globalization.pdf>. Income inequality is measured here as the wage ratio of U.S. workers with a college degree versus those without one.

³⁵ Josh Bivens, “Using Standard Models to Benchmark the Costs of Globalization for American Workers without a College Degree,” Economic Policy Institute, Briefing Paper #354, March 22, 2013, at 6.

<http://s3.epi.org/files/2013/standard-models-benchmark-costs-globalization.pdf>.

³⁶ Josh Bivens, “Using Standard Models to Benchmark the Costs of Globalization for American Workers without a College Degree,” Economic Policy Institute, Briefing Paper #354, March 22, 2013, at 8.

<http://s3.epi.org/files/2013/standard-models-benchmark-costs-globalization.pdf>.

³⁷ Josh Bivens, “Using Standard Models to Benchmark the Costs of Globalization for American Workers without a College Degree,” Economic Policy Institute, Briefing Paper #354, March 22, 2013, at 9.

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