A Review of "The Periphery's Terms of Trade in the Nineteenth Century: A Methodological Problem Revisited" by Francis (2015)

Reviewer 2

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> I am wiser than this person; for it is likely that neither of us knows anything fine and good, but he thinks he knows something when he does not know it, whereas I, just as I do not know, do not think I know, either. I seem, then, to be wiser than him in this small way, at least: that what I do not know, I do not think I know, either.
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> Plato, *The Apology of Socrates*, 21d

> To err is human. All human knowledge is fallible and therefore uncertain. It follows that we must distinguish sharply between truth and certainty. That to err is human means not only that we must constantly struggle against error, but also that, even when we have taken the greatest care, we cannot be completely certain that we have not made a mistake.
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> Karl Popper, 'Knowledge and the Shaping of Reality'

Overview

Citation: Francis, J. A. (2015). The Periphery's Terms of Trade in the Nineteenth Century: A Methodological Problem Revisited. *Historical Methods*, Vol. 48, No. 1, pp. 52–65.

Abstract Summary: This article argues that most existing estimates of the periphery's nineteenth-century terms of trade contain a major downward bias because they use core country prices as proxies for peripheral country prices, ignoring dramatic price convergence. Correctly measured, the periphery's terms-of-trade boom was likely longer, greater, and more widespread than previously estimated, reinforcing Williamson's grand narrative but requiring revision of its details.

Key Methodology: Comparison of "own-price" terms-of-trade estimates (using local prices) versus "proxy" estimates (using core prices) for six peripheral countries, supplemented by a two-good test using Indonesian price data.

Research Question: Was the periphery's nineteenth-century terms-of-trade boom accurately measured by existing estimates, and how does correcting the methodology affect the understanding of the "great divergence"?

Summary

Is It Credible?

The article presents a compelling and methodologically rigorous critique of the existing quantitative consensus regarding the nineteenth-century terms of trade for the periphery. By revisiting the datasets underpinning Jeffrey Williamson's "grand narrative," Francis successfully identifies a systematic error that distorts our understanding of global economic history. The central thesis—that using core country prices as proxies for peripheral prices introduces a severe downward bias due to price convergence—is supported by persuasive evidence. While the proposed methodological solution faces practical and validation hurdles, the diagnosis of the problem appears robust. The article effectively demonstrates that what has previously been interpreted as a weak or nonexistent boom in the periphery was likely a statistical artifact of ignoring falling trade costs.

The credibility of the critique rests on the stark comparison between "own-price" estimates and "proxy" estimates. The visual evidence provided in the article is difficult to dismiss: in five out of six cases, the proxy estimates suggest a deteriorating trend while the own-price estimates show an improvement. The divergence is not merely a matter of degree but of direction; the bias is sufficient to flip the sign of the trend. This finding fundamentally undermines the reliability of datasets that rely heavily on proxy prices, such as those used to identify the "Indian paradox." By showing that India's proxy series mirrors the flawed methodology that obscures Indonesia's boom, the article makes a strong case that the paradox is an illusion. The argument is further strengthened by the detailed "two-good test" using Indonesian data, which isolates the mechanism of the bias. The divergence between the purchasing power of sugar in Java versus Britain illustrates exactly how price convergence masks the periphery's gains.

However, the article is on less certain ground when quantifying the precise magnitude of this bias for the periphery as a whole. The "two-good test" relies on sugar and cotton textiles—bulky or standardized commodities that were arguably most susceptible to the dramatic falls in transport costs and trade barriers of the era. While the author argues these goods are

representative, they likely represent the upper bound of price convergence. If the export baskets of other peripheral nations contained high-value, low-bulk goods (such as opium or silk) that experienced less convergence, the "massive" bias identified in the Indonesian case might be overstated when generalized. Consequently, while the existence of the bias is established, its aggregate scale across all 21 countries in the Williamson dataset remains an open question.

Furthermore, the validation of the proposed solution—the "Adjusted Part-Proxy" method—contains a circular element that warrants caution. To demonstrate that adjusting proxy prices for trade costs yields accurate results, the author calibrates the trade cost index using the known gap between domestic and foreign prices in the Indonesian data. While this successfully shows that the method *can* work if trade costs are accurately known, the high correlation coefficients reported are partly a result of this calibration. In a true research setting where domestic prices are unknown (the very problem the method seeks to solve), such calibration is impossible. Combined with the acknowledged scarcity of pre-1913 freight indices for other peripheral countries, the proposed "fix" is currently more theoretical than practical. The article successfully demolishes the old methodology but cannot yet fully build the new one.

Ultimately, the article makes a significant contribution by revealing the limits of what we know. It forces a re-evaluation of the "Great Divergence" narrative by showing that the periphery's terms-of-trade boom was likely longer and stronger than previously thought. The limitations regarding the generalization of the magnitude and the circularity of the validation do not negate the central finding: historical statistics that ignore the nineteenth-century transport revolution are fundamentally flawed.

The Bottom Line

The article is a highly credible correction to historical economic data, convincingly demonstrating that current estimates of the nineteenth-century periphery's terms of trade are biased downward. By failing to account for price convergence, previous researchers have underestimated the magnitude of the commodity boom and likely manufactured the "Indian Para-

dox" out of statistical error. While the author's proposed method for fixing these estimates faces data limitations and validation issues, the critique of the existing consensus is robust. We now know that the periphery's economic environment was more favorable than the data previously suggested.

Specific Issues

Circular validation of the adjusted proxy method: The article validates the "Adjusted Proxy" methodology by showing a high correlation (0.96 for the trend) with the reliable wholesale series for Indonesia. However, the construction of the adjustment factor involves a degree of circularity. As noted in the endnotes, the freight-rate index used to adjust the proxy prices was weighted and referenced so that it equaled the average gap in prices between Britain and Java for the 1908–1913 period (pp. 59, 62). By using the target variable (the price gap) to calibrate the adjustment tool, the methodology ensures a level of fit that would be impossible to achieve in a genuine proxy scenario where the domestic price is unknown. This likely inflates the perceived accuracy of the adjustment method.

Potential selection bias in two-good test: The demonstration of the "massive" downward bias relies on a test using raw sugar and cotton shirtings (p. 57). These commodities are bulky and standardized, making them particularly sensitive to the transport revolution and trade liberalization. Consequently, they likely experienced the most extreme price convergence. Generalizing the magnitude of the bias found in these specific goods to the entire trade baskets of peripheral countries—which may have included goods with different transport characteristics—may overstate the severity of the distortion for the periphery as a whole.

Reliance on Indonesia for statistical proof: The statistical confirmation of the superiority of the adjusted methodology is based exclusively on data from Indonesia (pp. 56, 60). While the author uses a visual comparison of six countries to argue for the general existence of the bias, the quantitative proof that the "Adjusted Part-Proxy" method works is derived from a single case study. This reliance is necessitated by the scarcity of data, which the author acknowledges (p. 58), but it limits the empirical robustness of the proposed solution and its applicability to economies with different structures.

Practical infeasibility of proposed solution: The article argues that future estimates should use the "Adjusted Proxy" method. However, the success of this method in the Indonesian case study depended on a high-quality freight-rate index. The author explicitly notes that such indices are "not currently available for other peripheral countries" for the first half of

the nineteenth century (p. 58). This admission suggests that while the paper successfully diagnoses the problem, the proposed remedy is currently infeasible for the majority of the countries in the dataset due to data limitations.

Methodological and presentation issues: There are several minor issues regarding methodology and classification. The empirical test for Indonesia relies on spliced and extrapolated price series for cotton shirtings, which introduces margins of error acknowledged by the author (pp. 57, 62). The classification of Japan as an "own-price" estimate in Table 1 is inconsistent with the Appendix, which notes it is strictly an "adjusted part-proxy" for a significant period (pp. 56, 63). Additionally, the use of a Hodrick-Prescott smoothing parameter of 300 (p. 60) is non-standard for annual data, potentially affecting the specific correlation values reported. The adjustment methodology also relies on an unverified assumption that non-freight trade costs followed the same trend as freight rates (pp. 58, 62). Finally, the author classifies mixed series (like Argentina and India) as "Proxy" estimates, although he distinguishes "part-proxy" series as a separate category in his taxonomy (pp. 54, 56), noting that even these suffer from bias. The article also notes that the issue of transport costs had been identified by Williamson in earlier working papers but was not implemented in the final published series (p. 61).

Future Research

Reconstruction of domestic price series: Research must prioritize the primary reconstruction of domestic export and import price series for peripheral countries from archival sources (customs records, market reports), rather than attempting to refine proxy estimates. As the article demonstrates that proxies are unreliable without adjustment, and adjustment is impossible without data, the only path forward is the collection of "own-price" data similar to the Indonesian dataset.

Compilation of regional freight and trade cost indices: To make the "Adjusted Proxy" method viable for countries where domestic price data remains irretrievable, researchers should focus on compiling specific freight-rate and trade-cost indices for key peripheral routes (e.g., Bombay-London, Shanghai-London) for the early nineteenth century. This would allow for the testing of the adjustment methodology outside of the Indonesian case.

Sensitivity analysis of price convergence: Future studies should investigate the degree of price convergence for non-bulky and high-value commodities (e.g., opium, silk, tea) to determine if the "massive" bias observed in sugar and cotton is representative of the wider trade basket. This would refine the estimate of the magnitude of the terms-of-trade boom.

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