

Impact case study (REF3)

Institution: University of Essex		
Unit of Assessment: 17		
Title of case study: Impacting the Policy Process of International Organisations and Commodity-Dependent Countries		
Period when the underpinning research was undertaken: 2006-2018		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Neil Kellard	Professor in Finance	September 2002 – present
Period when the claimed impact occurred: August 2013-December 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Essex research has shown that commodity prices have not trended upwards in the long-run and that, in the medium-run, prices can take large swings away from this equilibrium. Using the most comprehensive analysis to date, including data from the present day back to the 17th century, this research has informed the policy process at the International Labour Organization (ILO) and Food and Agricultural Organization of the United Nations; provided new data employed by International Monetary Fund and Federal Reserve researchers in their investigations of commodity price behaviour; was used by the Australian Government and New Zealand Treasury in debates about future prices that provided the framework for fiscal policy and recommendations for diversifying exports to include more manufactured goods; and has informed prominent third sector organisations and developing country think tanks as the basis for conducting appropriate research and reaching policy decisions.</p>		
2. Underpinning research		
<p>Long-run analyses of commodity markets are dominated by the Prebisch-Singer hypothesis, which posits that over time the prices of commodities will fall in real terms (i.e., relative to manufactures). If a country's export commodities present such trends in their relative prices, the policy advice is to diversify the export mix to include significant proportions of manufactures and/or services. Moreover, the establishment of a falling or zero long-run trend implies that any increases in real prices and the export income derived from them should be seen as temporary. Part of the explanation for the resource curse, where resource rich countries grow less quickly than resource poor, is that the former spend too much revenue from commodity booms rather than allocating some saving to sovereign wealth funds.</p> <p>Since the late 1990's Kellard has been engaged in research into commodity price movements. Building on existing research, Kellard employed a dataset of 24 commodities in the <i>Journal of Development Economics</i> (2006) [R1]. This stressed that, because commodity prices make large movements, any long-run trend is difficult to discern given the length of sample period typically used in the literature, and that in many cases, it can be helpful to policymakers and forecasters to model medium-run price movements. In order to assess the long-run trend appropriately, it was therefore necessary to have a much longer dataset than used previously in the literature. Building on [R1] and in contrast to other research in this area, which typically uses datasets commencing in 1900, the <i>Review of Economics and Statistics</i> article (2010) [R2] develops a broad commodity price dataset from the 17th century to the present day. This article shows comprehensively that:</p> <p>(i) in the long-run there is evidence that the (real) price of important commodities have typically trended downwards or, and in this sense qualifies the Prebisch-Singer hypothesis, remained trendless. By contrast, [R2] shows that there is very little evidence that such prices ever present an</p>		

upward trend;

(ii) in the medium-run prices can take large swings away from trend. In fact, price cycles last on average around 30 years, suggesting that common policy initiatives – to smooth either commodity prices themselves or producer/consumer incomes around a trend – require analysis of both long-run and medium-run movements. Policymakers need to be keenly aware that prices may not return to equilibrium for many years.

Finally, his recent work in *World Development* (2017) [R3] [G1] and *Global Commodity Markets and Development Economics* (2018) [R4] is the first research to explicitly model the causes of long-run commodity prices over several centuries. Strikingly, there is evidence that commodity prices move income and interest rates, while interest rates move commodity prices. This historical perspective provides key information for contemporary policy makers. For example, loose monetary policy has tended to support higher commodity prices. Moreover, commodity price movements have an asymmetric country effect on economic activity; periods of falling commodity prices will support GDP growth for commodity importers like the U.S. but depress growth for commodity exporters such as Chile.

These findings are important to commodity dependent countries, as discussed in more detail in section four. The research itself is published in leading journals in the field of agricultural and development economics, as well as economics as a wider field, and are consequently well read and cited by policymakers, governmental and non-governmental researchers.

3. References to the research [available from HEI on request]

[R1] Kellard, N. and Wohar, M. "On the Prevalence of Trends in Primary Commodity Markets", *Journal of Development Economics*, 79, 146-167, 2006. <http://doi.org/10.1016/j.jdeveco.2004.12.004> [ABS 3*]

[R2] Harvey, D., Kellard, N., Madsen, J. and Wohar, M. "The Prebisch-Singer Hypothesis: Four Centuries of Evidence", *Review of Economics and Statistics*, 92, 367-377, 2010. <http://doi.org/10.1162/rest.2010.12184> [ABS 4*]

[R3] Harvey, D., Kellard, N., Madsen, J. and Wohar, M. "Long-Run Commodity Prices, Economic Growth and Interest Rates: 17th Century to the Present Day," *World Development*, 89, 57-70, 2017. <http://doi.org/10.1016/j.worlddev.2016.07.012> [ABS 3*].

[R4] Harvey, D., Kellard, N., Madsen, J. and Wohar, M. "The Resource Curse, Commodity Prices and Economic Growth," In *Global Commodity Markets and Development Economics*. 2018 - Editor: Pfaffensteller S. Routledge, London and New York. ISBN:978-1138898257

Related funding

[G1] Kellard, N. Business and Local Government Data Research Centre. ESRC 2014-2019 £41,000 to examine commodity price movements and growth. (Total value of award £4,924,784).

4. Details of the impact

Kellard's research has impacted on a transnational scale, changing thinking and influencing the working policy process of countries and international organisations. Achieving impact in this area is challenging requiring clear empirically based research that is significant and far reaching as international organisations will typically only base their policy on a large number of empirical research papers. Hence, only highly robust research influences the policy process and thinking on commodity price movements. Analysis of governments and international institutions has been influenced by Kellard's research because it is the most robust confirmation of long and medium-run price movements and their causes. The research is not only influential, but it is significant in terms of its reach across sectors. It has informed the policy process and changed the thinking, policy and practice of international organisations, banks, governments and third sector organisations. Including:

Informing the policy process of international organisations to generate policy

recommendations

(i) In a 2017 report, the Food and Agricultural Organization (FAO) of the UN utilised Kellard's research [R2] stating, *'The Prebisch-Singer hypothesis argues that the terms of trade of economies dependent on primary commodities tend to deteriorate in the long run due to the secular decline of primary commodity prices relative to the prices of manufactured goods (Singer, 1950; Prebisch, 1950)...Therefore, developing countries' reliance on commodity exports is not a viable basis for a long-term development strategy, since the relative value of these exports follows a downward trend...In order to ascertain the validity of the Prebisch-Singer hypothesis across different types of commodities, econometric tests generally found that the hypothesis holds, despite the occurrence of relatively short periods of commodity price surges (...; Harvey et al., 2010)' [S1].*

(ii) In 2018 Kellard's research [R2] was used by UN Under-Secretary-General and the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLS) in order to recommend several policies to least developing countries (LDCs) [S2].

(iii) In 2016, Kellard's research informed Vietnamese economic analysis by the ILO and was the primary underlying empirical research to warn policymakers regarding the concentration of the production and export of natural resources. Hansjörg, Erwin, and Truong (2016) comment: *'The long-term terms of trade effect expected by Singer and Prebisch reflects an overall slower productivity growth in developing countries producing natural resources as well as a relative stagnation of the demand of such products. Allowing the market mechanism to work developing countries will be pushed towards the production and export of primary products with relatively low value added. This reduces the possibility of catching-up. Empirically the Prebisch– Singer terms of trade hypothesis is supported for most of the primary products. However, there are some exceptions (see Harvey et al. 2010; Arezki et al. 2013)'.* [S3, S3a]

(iv) In International Monetary Fund (IMF) and Federal Reserve Bank of Minneapolis Working Papers, Kellard's research has been used to underpin further analysis and policy recommendations. For example, Arezki et al. (2013) [S4] use the newly constructed long-run data from Harvey et al. (2010) [R2] to assess both the Prebisch-Singer hypothesis using new empirical tests and whether the volatility of commodity prices has changed over the long historical period noting, *'Primary commodity prices are found to be highly volatile with often time varying volatility. In general, the volatility has the tendency to increase during the recent years'*, underlining the importance of risk management at a country level as an area of policy.

Informing the policy process of Central, Regional and Development Banks

(i) Chari and Christiano (2014) for the Federal Reserve Bank of Minneapolis investigate the optimal extraction of natural resources by using the data from [R2]. They report that the data in [R2] *'...shows that the prices of all our exhaustible resources have actually risen at a rate far lower than that on U.S. Treasuries. Prices on commodities for which we have the longest continuous data record (lead, coal and gold) rose at an annual average rate of 0.07, 0.13 and 0.16 percent, respectively, since 1650. Not one of the 11 commodities examined rose at a rate comparable to U.S. Treasury securities. (Tin is the closest, at 0.71.) Clearly, this simple version of Hotelling's theory does not explain commodity price trends.... In our view, devising appropriate policy responses to such fluctuations requires an economic theory that is consistent with the data.'* [S5].

(ii) Regional development banks, such as the Asian Development Bank, have used Kellard's research [R1] and [R2] as part of their evidence base on how to model commodity prices. For example, in considering the Chinese economy's impact on commodities, the Asian Development Bank (2016) report [S6] notes that accounting for structural breaks (i.e., and that therefore highlight the medium-run) are an integral part of appropriately modelling prices, citing [R1] and [R2].

Informing Government policy in Australasia

(i) In a 2016 working paper for the Australian Government's Productivity Commission [S7], the results of [R2] were employed to frame the thinking about the path of future commodity prices. In

particular, it noted research by Kellard: *'...has suggested that countries like Australia, which are predominately exporters of primary commodities and importers of manufacturing goods, are likely to experience falling terms of trade over time as a result of their trade mix.'*

(ii) Kellard's research has also contributed to economic analysis undertaken by the New Zealand Government. In a New Zealand Government Treasury working paper by Phillip Borkin, [S8a] the methodological approach of Kellard's research [R1] is employed to show that the country's terms of trade have been increasing since 1973. The Treasury paper notes that [R1] suggest that researchers should undertake *'theoretical and empirical work examining local (i.e., medium-run) trends...Both types of analysis are undertaken below.'* Employing Kellard's suggestion, the paper finds evidence of an upward trend in the post-1973 period and discusses how to maintain this upward trend. The results of Borkin's work based on employing Kellard's suggestion have been cited by further New Zealand Government working papers [S8] and have on-going influence on New Zealand Government budgetary analysis.

Impact on think tanks and third sector organisations

(i) Kellard's research methods and findings have been deployed by developing country think tanks as the basis for conducting appropriate research and reaching policy decisions. For example, the Moroccan based Policy Center for the New South [S9] focuses on contributing *'to knowledge sharing and to enrich reflection on key economic and international relations issues, considered as essential to the economic and social development of Morocco, and more broadly to the African continent.'* A recent Policy Brief by Jégourel (2017), on the trends and cyclicity of commodity prices, cites both [R2] and [R3]. For example, in terms of the methodological approach, Jégourel (2017) comments *'In addition to these justifications, several studies also focus on improving the quality of the series used. Harvey et al. (2017) thus explain that they removed the gold and silver price series used by Harvey et al. (2016) because of their statistical ambiguity and the distortions they could have created'* [S9].

(ii) The Bangladesh Development Research Centre (BDRC) employed Kellard's findings [R2] as background and context for the deteriorating terms of trade in developing countries. By constructing an estimation model for terms of trade for Bangladesh, the BDRC gave recommendations to the Bangladeshi Government in 2017. For example, *'The problem in the case of Bangladesh is that its export quality for manufactured goods has overall been decreasing. Hence, Bangladesh's increased export value is due solely to increased quantity, but not quality. This implies that in addition to the long-standing policy recommendation for developing countries to diversify exports, it is also important to improve the quality of exports. In other words, export promotion policies focusing on export quantities might be reconsidered and redirected to focus on export quality and export prices.'* [S10]

(iii) In the UK, Kellard's research has informed Action Against Hunger, an international global charity committed to saving the lives of malnourished children. Drawing on [R2] as underlying research accounting for uncertainty and impacting the drivers of hunger their report, 'An Outlook on Hunger' noted *'Over the long-term, technological improvements tend to drive prices down through increased efficiencies. Even as certain products grow scarcer and prices should therefore rise, their increased value funds improved production and/or the development of alternatives, and so in the long run the prices still tend to decrease.... There is also growing evidence to support the Prebisch–Singer hypothesis that commodity prices decline over the long term relative to that of manufactured goods. See: Harvey, D.I., Kellard, N.M., Madsen, J.B. and Wohar, M.E., 2010...'* [S11]

5. Sources to corroborate the impact

[S1] ['Commodities and Development Report 2017: Commodity Markets, Economic Growth and Development'](#), Food and Agriculture Organization of the United Nations, 2017 (pp.9, 77)

[S2] ['State of the Least Developed Countries'](#), UN-OHRLLS, 2018 (p.41)

[S3] ['Vietnam in the Global Economy: Development through Integration or Middle-income Trap?'](#) by Hansjörg Herr, Erwin Schweissshelm, and Truong-Minh Vu, Friedrich-Ebert-Stiftung (FES), 2016 (p.44)

- [S3a] [‘The Integration of Vietnam in the global economy and its effects for Vietnamese economic development.’](#) The Global Labour University and International Labour Organisation, 2016 (p.6).
- [S4] [‘Testing the Prebisch-Singer Hypothesis since 1650: Evidence from Panel Techniques that Allow for Multiple Breaks’](#) Rabah Arezki, Kaddour Hadri, Prakash Loungani, Yao Rao, IMF Working Paper WP/13/180, August 2013 (section 5, p.30).
- [S5] ‘The Optimal Extraction of Exhaustible Resources,’ V. V. Chari and Lawrence Christiano, Economic Policy Paper 14-5, Federal Reserve Bank of Minneapolis, 2014 (pp.3, 6).
- [S6] [‘Structural change and moderating growth in the People’s Republic of China: Implications for Developing Asia and Beyond.’](#) Asian Development Bank, 2016 (pp.20, 41)
- [S7] ‘VUMR Modelling Reference Case, 2009-10 to 2059-60,’ Owen Gabbitas and Umme Salma, Productivity Commission Staff Working Paper, Australian Government Productivity Commission, 2016 (p.173).
- [S8] [‘Decomposing New Zealand’s Terms of Trade’](#), Phillip Mellor, New Zealand Treasury, 2015/2016 (pp.16, 29) linked to [S8a]
- [S8a] ‘Past, Present and Future Developments in New Zealand’s Terms of Trade,’ Phillip Borkin, New Zealand Treasury, 06-09, 2006 (pp. 6, 7, 23, 41, 57)
- [S9] [‘Trends and cyclicity of commodity prices \(Part 1\): debating the Prebisch-Singer hypothesis’](#) Yves Jégourel, OCP Policy Center, Policy Brief, PB-17/32, 2017(p.6)
- [S10] Free Falling Terms of Trade Despite Industrialisation: The Case of Bangladesh. [Bangladesh Development Research Centre 2017](#) (p.14)
- [S11] Action Against Hunger – An Outlook on Hunger 2017 (pp.20, 29).