



781 Views | 145 CrossRef citations to date | 3 Altmetric

Original Articles

On Biomass Energy Consumption and Real Output in the US

J. E. Payne

Pages 47-52 | Received 04 May 2009, Accepted 03 Jul 2009, Published online: 05 Feb 2011

🗨️ Cite this article 🔗 <https://doi.org/10.1080/15567240903160906>

Sample our
Engineering & Technology
Journals
>> [Sign in here](#) to start your access
to the latest two volumes for 14 days

Full Article Figures & data References Citations Metrics
 Reprints & Permissions [Read this article](#) [Share](#)

Abstract

This empirical note utilizes US annual data from 1949 to 2007 to examine the causal relationship between biomass energy consumption and real gross domestic product (GDP) within a multivariate framework. Toda-Yamamoto causality tests reveal unidirectional causality from biomass energy consumption to real GDP supportive of the growth hypothesis.

Keywords:

biomass energy consumption

Granger-causality

real GDP

Notes

- ¹Energy Information Administration, Monthly Energy Review, July 2008.
- ²National Renewable Energy Laboratory, www.nrel.gov. [Balat and Ayar \(2005\)](#) survey world trends toward biomass energy use while [Kaygusuz \(2009\)](#) provides a review of the production, consumption, and technologies for biofuels in developed and developing countries.
- ³The US Department of Energy (DOE) undertakes a number of programs to facilitate the development of biomass as an energy source: The DOE Biofuels Program develops new technologies to utilize low-cost cellulosic biomass into ethanol; the DOE Biopower Program addresses biomass-based electricity generation systems and the development of sustainable energy crops; and the DOE Regional Biomass Energy Program provides cost-sharing and other support to state and local governments in the production and use of biomass energy.
- ⁴Much of the discussion of the hypotheses and related literature is drawn from the survey article on the causal relationship between energy consumption and economic growth by [Payne \(2010\)](#).
- ⁵The following are the dates in which data is reported by the Energy Information Administration (www.eia.doe.gov) for the various subcategories of biomass energy consumption: wood (1949–2007), waste (1970–2007), and biofuels (1981–2007).
- ⁶The use of real gross fixed capital formation as a proxy for capital follows the work of Soytaş and Sari (2008) and citations therein.
- ⁷Test statistics for Granger-causality have the standard asymptotic distribution to draw valid inferences.

Related research

People also read

Recommended articles

Cited by
145

Information for

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

Opportunities

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

Help and information

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2025 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)

[Accessibility](#)



Taylor & Francis Group
an informa business

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG