Burgernomics: How Food Prices & Inflation Relate to the Big Mac Index

Maya Liao, Madelyn Marcotte, Ben Nordemann, Daniel Xu

1. **Introduction**

Popularized by The Economist’s Big Mac index, the term *Burgernomics* refers to the idea of using the price of the McDonald’s Big Mac to reflect purchasing power parity (PPP). PPP is a metric commonly used in macroeconomics to compare the relative value of world currencies by accounting for the costs of goods and services. In essence this metric helps facilitate the comparison of economic performance between countries. As such, by applying this concept to the varying global prices of the Big Mac, The Economist sought to provide a “lighthearted guide to whether currencies are at their ‘correct’ level”.

Our project aims to explore the connection between the Big Mac index and other standard economic indicators, like inflation rates and gross domestic product (GDP), and to present the findings in a manner that is easily understandable for readers with varying levels of expertise. To accomplish this, the team will design an interactive visualization using data sourced from The Economist, Kaggle, and The World Bank. Furthermore, to enhance the insights from our data, we will incorporate a predictive uncertainty metric. This will help us visualize potential future economic activity more effectively.

1. **One-Sentence Description**

Our project seeks to explore the correlation between the Big Mac index and standard economic indicators, presenting the findings through an accessible interactive visualization.

1. **Project Type**

Interactive Data Visualization

1. **Audience**

The outcome of this project is expected to have a greater impact on the general public rather than on specific academic groups, though economists may also find our visualization intriguing. By designing our visualization to be accessible to readers of any intellectual background, our analyses will focus on topics that typical readers find interesting or have some familiarity with.

1. **Approach**

What is your approach and why do you think it’s cool and will be successful?

* 1. **Details**
* Our approach is to split the data up by country, and show it for each country
  + We can compare countries / metrics side by side dynamically, or add them to same graph.
  + We also plan to display each country on an interactive world map, where when a country is clicked on, the data for that country appears.
* We plan to show uncertainty for inflation and food accessibility indexes and show where these measures may go in the future using based on uncertainty predictions.
  1. **Evidence for Success**
* Successfully show some correlation or uncover insights between Big Mac Index, Inflation, and Food prices

1. **Best-Case Impact Statement**

In the best-case scenario, what would be the impact statement (conclusion statement) for this project?

Common people are now able to view the effects of food and fast-food inflation on citizens’ ability to get healthy food by viewing these statistics for each country, as well as predictive calculations of uncertainty.

1. **Major Milestones**

* Conduct an exploratory analysis of the data we select.
* Conduct a literature review of existing visualization techniques for economic data.
* Determine what types of visualizations we want to include in our interactive dashboard.
* Prototype our design using Figma or Tableau.
* Create a first draft of our visualization using state-of-the-art techniques gathered from our literature review.
* Get feedback and review our design for revisions.
* Revise and develop final draft of visualization.

1. **Obstacles** 
   1. **Major Obstacles**

* Finding data that spans multiple countries and multiple years without being sparse.
* Integrating data from multiple sources into the same visualizations.
* Coding the interactive elements of our visualization.
  1. **Minor Obstacles**
* We may need to adjust the visualizations we include in our interactive dashboard to accommodate gaps in data.
* We intend to include multiple pieces of information for each country, so we will need to make sure we lay it out in a way that is not overwhelming to users.

1. **Resources Needed**

What additional resources do you need to complete this project?

* Data showing the big mac index, and other data we want to include.
* Literature review of the state-of-the-art techniques in this area of vis.
* Code to generate the visualizations we want to include in our dashboard.
* Code to make the visualizations interactive.
* People to provide us with feedback on our first draft.

1. **Five Related Publications**

List five major publications that are most relevant to this project, and how they are related.

10.1 Our Big Mac index shows how burger prices are changing.

*The Economist*. <https://www.economist.com/big-mac-index>

This publication gives us a draft about what exactly the Bugernomics is. From briefly introducing the concept to providing users with exploring data visualization, this is the one of key publications which can give the audience a crash course about the Bugernomics.

10.2 Burgernomics: A Big Mac™ Guide to Purchasing Power Parity

<https://files.stlouisfed.org/files/htdocs/publications/review/03/11/pakko.pdf>

This publication focuses Burgernomics more on the economy analysis level. It analysis how the PPP is related to the Big Mac index and how does it perform.

The publication suggests that the Big Mac, a blend of tradable commodities and services, showcases the concepts and limitations of purchasing power parity (PPP) as effectively as more complex measures. Given its global presence, impacted by tariffs and trade barriers, alongside its production by a singular company, the Big Mac embodies aspects of imperfect competition. Although its tradable ingredients might imply price convergence globally through arbitrage, its unique mix of characteristics illustrates why PPP often does not apply, except in specific conditions, making it an instructive example of economic principles in practice.

10.3 Why Is Food More Expensive in Developing Countries?

<https://www.vmdagro.com/blog/why-is-food-more-expensive-in-developing-countries>

This publication focuses on the part about the Burgernomics itself. Why is the price of a big Mac in Mcdonalds different in different countries? It suggests the fact that due to the various economic developments; it comes with 5 major reasons as follows

a. Urbanization and Population Growth.

b. Agricultural Infrastructure

c. Weather Patterns

d. Regional Export Markets

e. General Inflation

10.4 An Investigation of Income and Wage Inequality in Turkey Using Burgernomics

<https://www.tandfonline.com/doi/epdf/10.1080/00128775.2023.2253216?needAccess=true>

This publication focuses on exactly one specific country---Turkey, with the Bugernomics, they managed to explain the index discrepancy due to the economic development mismatch and how should the policies been made to erase that gap.

For example, according to the calculation, some cities (e.g., Sanliurfa) in the East and southeastern Turkey could barely afford 4 Big Macs per day, the bottom kcal limit, while some other cities in the West (e.g., Istanbul) earned the equivalent to 20 Big Macs per day.

This gives a hint for the Turkish policy makers that in order to lower inequality between cities, Turkey should focus on and invest more in its eastern and southeastern regions.

10.5 Burgernomics: What can your burger tells you about

<https://eudl.eu/pdf/10.4108/eai.26-9-2020.2302713>

This publication highlights the impact of currency valuations on exports and imports, thereby affecting the price of a Big Mac. When the currency is overvalued, it can be said that the currency is expensive so that exports are expensive. Most likely, the country with this condition cannot compete with competitors from other countries. On the contrary imports are cheap, therefore they can benefit from importing cheap raw materials to reduce the cost. Government can set their fiscal policy based on this condition. For example, decrease or eliminate tax on export activity. On the other hand, undervalued currency makes currency cheap and as a result export is cheap as well. The government can take advantage of it by boosting exports and suppressing imports. If it combines with a loose monetary policy, the interest rate will be decreased.

1. **Define Success**

For a data visualization project focusing on "Burgernomics"—generally speaking, success can be defined by easily accessible and understandable with the target audience and gain the ideal response from them. To achieve this goal, our visualization should meet the following requirements.

a. Clarity and Comprehensibility: The primary goal of this data visualization is to make complex data more accessible and understandable. The goal is for the target audience, they can quickly grasp the key insights without needing extensive explanations for the Burgernomics.

b. Engagement: visualization engages the intended audience – through interactivity, storytelling, or simply should be visually appealing – and encourages audience with further exploration or conversation.

c. Accuracy and Integrity: The visualization should accurately represent the underlying data we collected from the World Food Bank and Kaggle without misleading the viewer. This includes using appropriate scales, avoiding distorting graphical elements, and making sure the data is up to date and correctly sourced.

d. Feedback: We will create a data visualization based on the ideas mentioned above to let the potential audience explore freely and do a quick survey among them. The questions will be like “Do you the visualization is easily understandable?” “Can you tell me which country among U.S., U.K. and France, has the higher Burgernomic index in 2010?”

e. Usability and Accessibility: An ideal data visualization should be accessible to as wide an audience as possible, we should attract more potential users into our test pool, including those with disabilities. This means considering color choices for color blindness, providing text alternatives for key visual elements, and ensuring the visualization is navigable for people using assistive technologies.

1. **References**

[1] The Economist. (2024, January 29). Our Big Mac index shows how burger prices are changing. *The Economist*. https://www.economist.com/big-mac-index

[2] *Global Food Prices Database (WFP) - Humanitarian Data Exchange*. (n.d.). https://data.humdata.org/dataset/wfp-food-prices

[3] Clements, K. W., Lan, Y., & Seah, S. (2010). The Big Mtac Index two decades on: an evaluation of burgernomics. *International Journal of Finance & Economics*, *17*(1), 31–60. https://doi.org/10.1002/ijfe.432

[4] Research, V. A. (2020, October 12). *Why is food more expensive in developing countries? — VMD Agro*. VMD Agro. https://www.vmdagro.com/blog/why-is-food-more-expensive-in-developing-countries

[5] Kay, M., Kola, T., Hullman, J., & Munson, S. A. (2016). When (ish) is My Bus? *Acm*. https://doi.org/10.1145/2858036.2858558

[6] Akarsu, M. Z., Gharehgozli, O., & Atal, V. (2023). An investigation of income and wage inequality in Turkey using Burgernomics. *Eastern European Economics*, 1–21. https://doi.org/10.1080/00128775.2023.2253216

[7] *What makes a visualization memorable?* (2013, December 1). IEEE Journals & Magazine | IEEE Xplore. https://ieeexplore.ieee.org/abstract/document/6634103

[8] Pakko, M. R., & Pollard, P. S. (2003). BurgerNomics: A big MacTM guide to purchasing power parity. *Review*, *85*(6). https://doi.org/10.20955/r.85.9-28

[9] Lestari, D. (2020). Burgernomics: What can your burger tells you about. *Proceedings of the International Conference on Environmental and Technology of Law, Business and Education on Post Covid 19, ICETLAWBE 2020, 26 September 2020, Bandar Lampung, Indonesia*. https://doi.org/10.4108/eai.26-9-2020.2302713