Studies in Applied Economics

HYPERINFLATION: AN INTERACTIVE VISUALIZATION WEB APP

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By Mitchell Shabani

About the Series

The *Studies in Applied Economics* series is under the general direction of Professor Steve H. Hanke, Co-Director of the Institute for Applied Economics, Global Health and Study of Business Enterprise (hanke@jhu.edu).

About the Author

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This project was undertaken independently during 2013. Mr. Shabani thanks Professor Steve H. Hanke and Nicholas Krus for their advice and efforts in providing the necessary data.

Summary

Recent research by Professor Steve H. Hanke and Nicholas Krus has for the first time documented and categorized all known cases of hyperinflation. The scale of the phenomenon of hyperinflation is enormous, making visualization and understanding of hyperinflation events difficult for scholars, both within and without the economic community, to comprehend. Faced with this challenge, and equipped with newly compiled hyperinflation data, I created an interactive visualization site (econographic.com) that allows users to explore each hyperinflation episode and see how different inflation rates and durations affect prices.

Introduction

Hyperinflation[1] was inspired by an *EconTalk* podcast[2] in which Russ Roberts, a research fellow at Stanford University's Hoover Institute, discussed hyperinflation with Professor Steve H. Hanke[3], Professor of Applied Economics at Johns Hopkins University. During the discussion, Professor Hanke noted his research of all 56 known cases of hyperinflation[4], and discussed how difficult comprehension

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[1] Shabani, Mitchell. "Hyperinflation." Hyperinflation. http://www.econographic.com. Accessed March 11, 2014.
[2] "Hanke on Hyperinflation, Monetary Policy, and Debt." Hosted by Russ Roberts. EconTalks. *Library of Economics and Liberty*. http://www.econtalk.org/archives/2012/10/hanke_on_hyperi.html. Accessed March 12, 2014.
[3] Wikipedia Contributors. "Steve Hanke." Wikipedia, The Free Encyclopedia. http://en.wikipedia.org/wiki/Steve_Hanke. Accessed March 11, 2014.
[4] Steve Hanke and Nicholas Krus, "World Hyperinflations". In Randall Parker and Robert Whaples (eds.) Routledge Handbook of Major Events in Economic History, London: Routledge Publishing (2013).

of the scale of hyperinflation is for the public to grasp. For example, in Zimbabwe[5], hyperinflation led to the issuance of trillion-dollar bills; conceptualizing the causes for issuing trillion-dollar bills is extremely difficult. This online economic modeling tool hopes to make the concept of hyperinflation easily comprehensible for both experts in economics and the public.
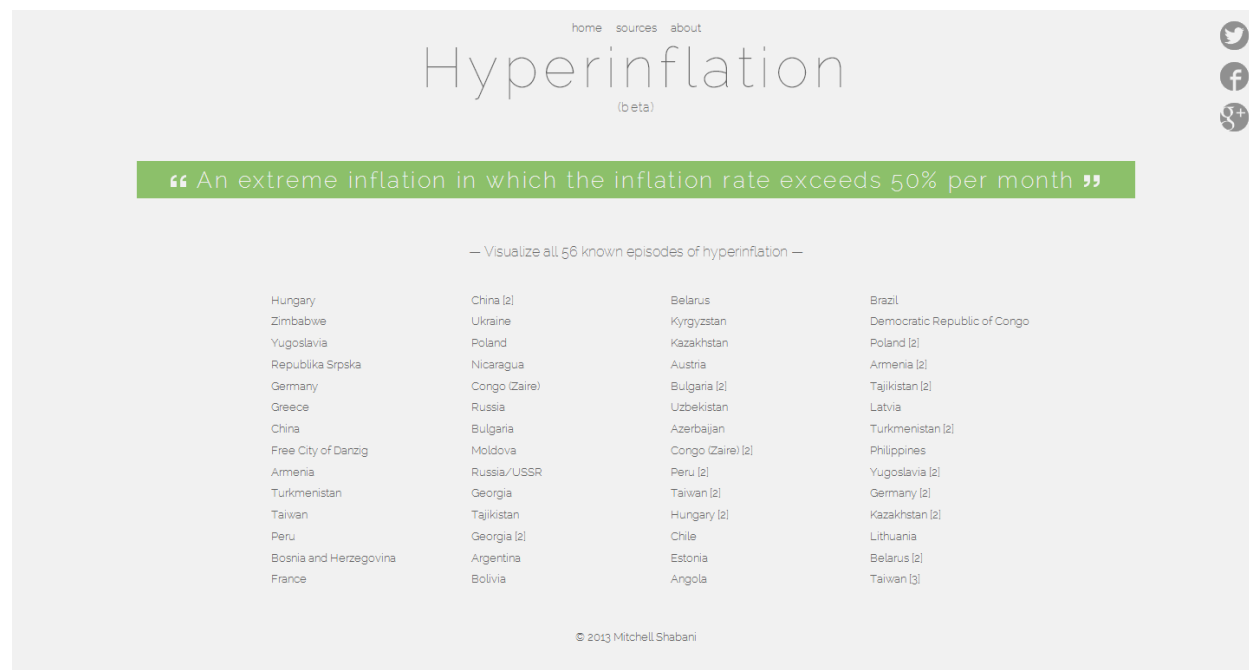

Figure 1: Hyperinflation home page; country selection list. Source: Shabani, Mitchell. "Hyperinflation." Hyperinflation. econographic.com (accessed March 11, 2014).

Project Goal

The goal of this website is to help scholars and the public visualize and grasp the magnitude of global hyperinflation episodes. Interactive visualization tools are a major factor in making the application and the hyperinflation data easily understandable and accessible for users. Inflation timelines allow users to see how inflation and prices rapidly increase within a period of a few years or months.

The challenge with hyperinflation is to translate numbers into something more meaningful and tangible. I knew that a visualization of the effects of hyperinflation would go a long way in explaining it. But a static infographic would be limited in its ability to show the user how the phenomenon occurred through time – a vital point to truly grasping the matter. The key is an interactive visualization of hyperinflation, where users can navigate and manipulate the timeline of each episode in order to personally explore how inflation and prices grew with each day that passed.

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[5] Regarding Zimbabwe's history of hyperinflation, the Hanke-Kwok (2009) analysis is currently the only reliable data source (see "On the measurement of Zimbabwe's Hyperinflation" by Steve H. Hanke and Alex K. F. Kwok).

Components

Each instance of the 56 hyperinflation episodes has its own website page. The country-specific pages show unique episode data but share the same timeline visualization and coding. The main feature of each hyperinflation page is the timeline slider. The timeline slider allows complete control of the website from a single user-friendly application. The user can drag the slider from beginning to end of the hyperinflation episode, and see the effects of the episode's inflation through the different visualizations.

The current visualization sections are:

1) Profile summary, showing the episode's main statistics such as ranking, duration and inflation rates

2) Progress bar, showing the exponential nature of hyperinflation

3) Price chart and graph, showing how the prices of common goods would change throughout the episode

4) Scale visual, illustrating how tall a stack of bills would now be needed to equal the value of one original bill before hyperinflation started

These visualizations best represent the scale and severity of hyperinflation. In the future, these tools will be refined and expanded as the project evolves.

Figure 2: Russia/USSR hyperinflation timeline slider and episode profile

3

Methodology

All data used in this project originate from the Hanke-Krus Hyperinflation Table[6]. The hyperinflation slider tool works by dividing the duration of the episode into one-day intervals, thus outputting inflation change per day. The site converts each episode's average monthly inflation rate into an average daily inflation rate. It is worth noting that because average rates are used, the progression of each episode's inflation appears smooth and gradual on the site. In reality, the inflation within a given episode's month, week or day may not necessarily have been this free from volatility. That is, while an episode on the site may show inflation gradually accumulating at the same rate day to day within a month, in reality, inflation could have clustered in any given week of that month. But this is only a technical consideration to overcome the fact that it is virtually impossible to obtain the actual daily inflation rates. The data are nonetheless accurate, the methodology precise and the outcomes the same.

Technical Notes

The site is written in HTML5 – featuring the new range and canvas elements – and CSS3, with the goal of simplicity, speed and cross-platform uniformity. The site is also optimized as a web app for mobile and tablet devices using simple CSS media queries, meaning the site will look and behave like a native application.

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[6] *Steve Hanke and Nicholas Krus, "World Hyperinflations". Cato Working Paper no. 8, August 15, 2012.*

Screencaps

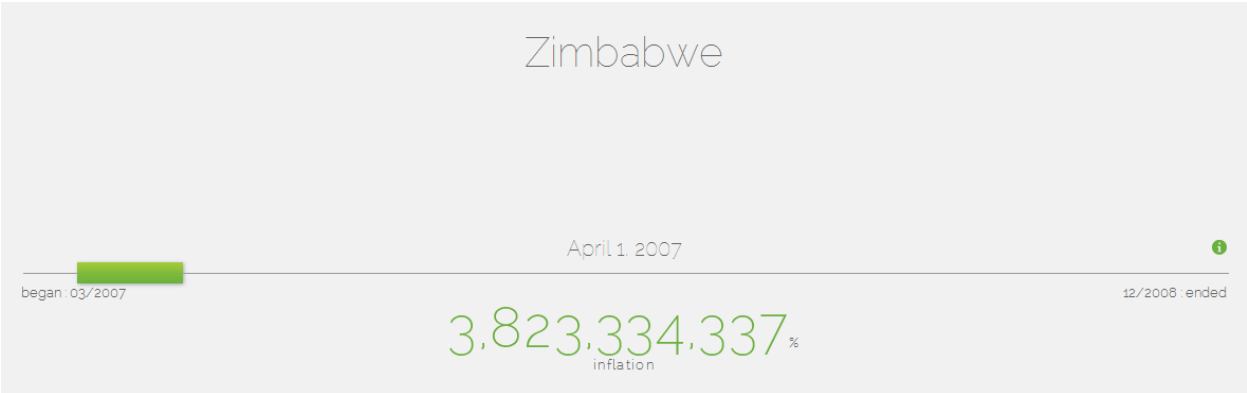*Figure 3: Hyperinflation home page; country selection list*

Figure 4: Zimbabwe hyperinflation timeline slider application

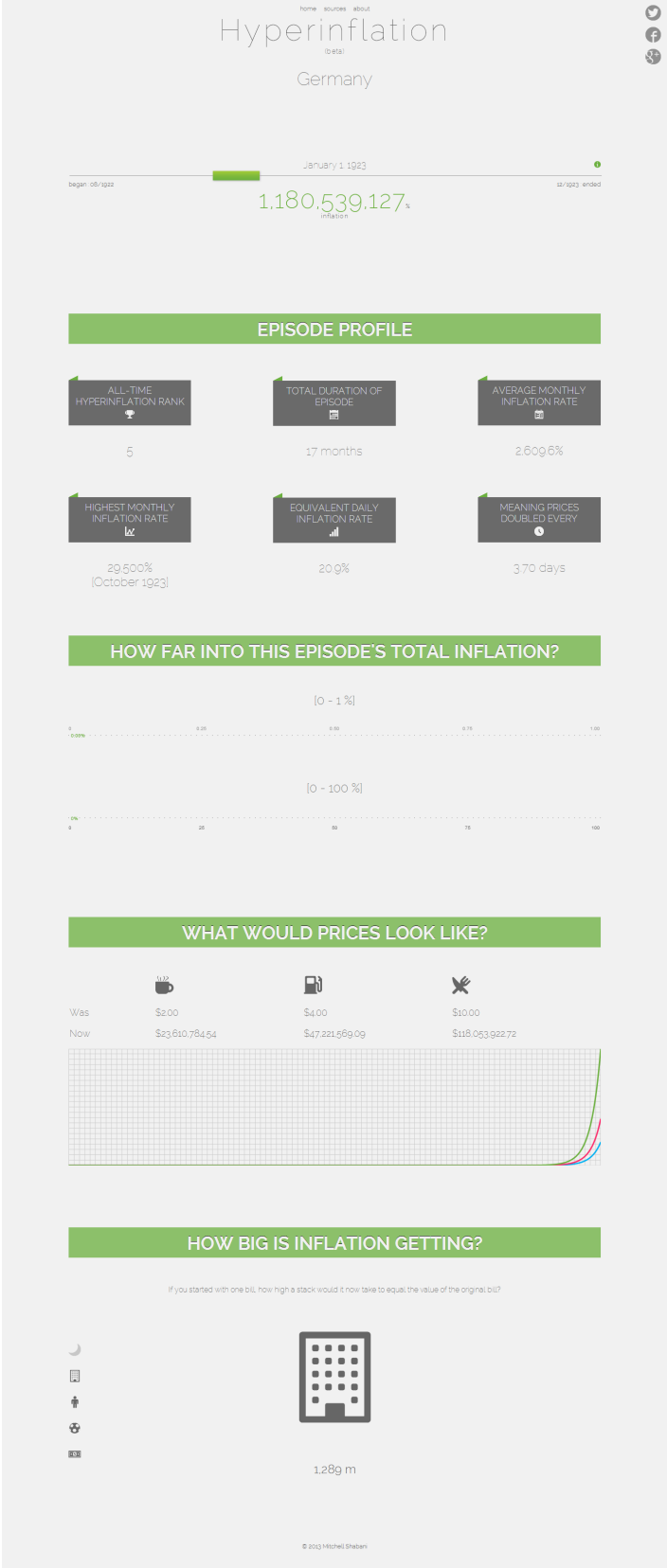*Figure 5: Russia/USSR hyperinflation timeline slider and episode profile*

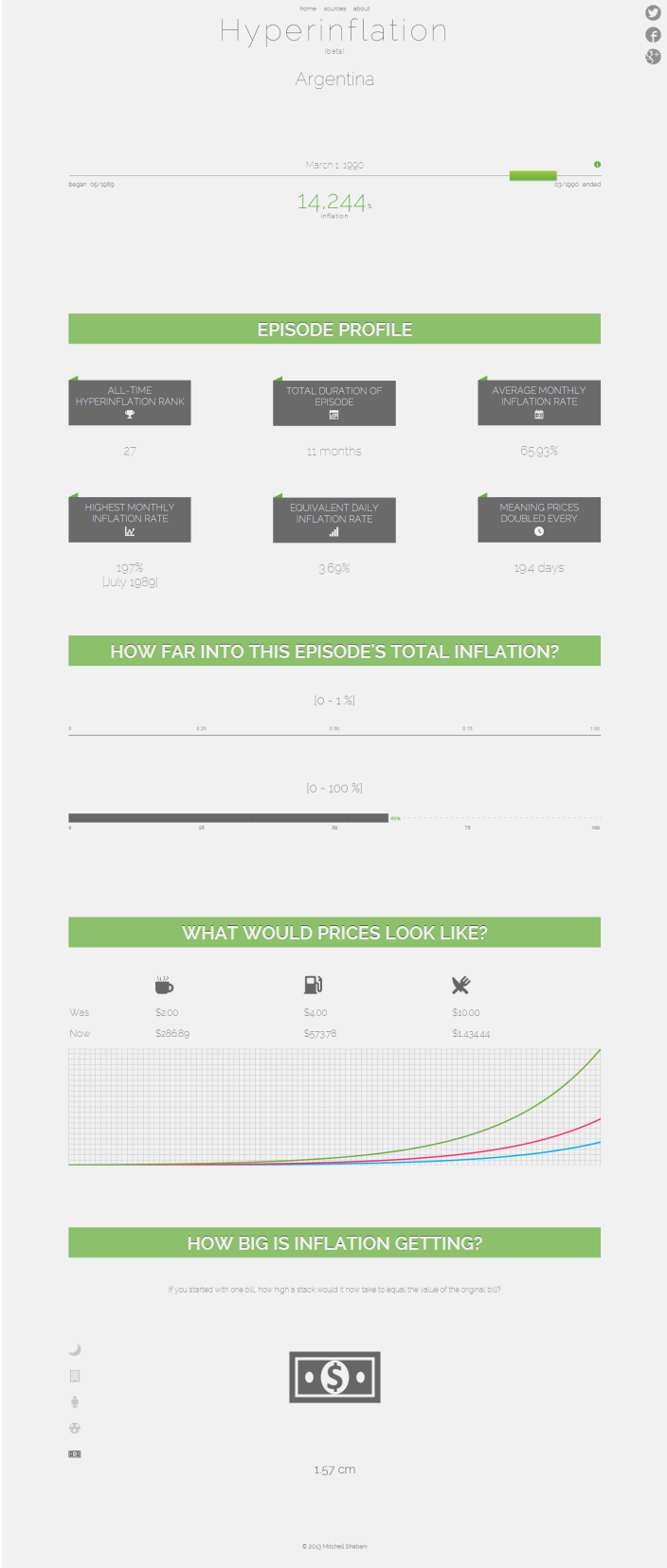*Figure 6: Germany hyperinflation timeline slider and episode profile*

Figure 7: Argentina hyperinflation timeline slider and episode profile