

# Inflation by the Decades: 2000s

By: Steve H. Hanke and Tal Boger

August 2018

*Johns Hopkins University Institute for Applied Economics,  
Global Health, and the Study of Business Enterprise*

# Table of Contents

	About the Authors	
	About the Series	
I.	<b>Introduction</b> .....	2
	Key Findings	
	Methodology	
	World Inflation Choropleth	
II.	<b>Africa</b> .....	4
	Summary	
	Choropleth of African Inflation	
	Zimbabwe’s Hyperinflation Summary	
	Zimbabwe’s Hyperinflation Analysis	
III.	<b>South America</b> .....	6
	Summary	
	Choropleth of South American Inflation	
	Venezuela Hyperinflation Summary	
	Venezuela Hyperinflation Analysis	
IV.	<b>North America</b> .....	8
	Summary	
	Visualizations of North American Inflation	
V.	<b>Europe</b> .....	9
	Summary	
	Choropleth of European Inflation	
VI.	<b>Asia</b> .....	10
	Summary	
	Choropleth of Asian Inflation	
VII.	<b>Australia</b> .....	11
	Summary	
	Visualization of Australian Inflation	
VIII.	<b>References</b> .....	13

## About the Series

*Inflation by the Decades* is the most comprehensive free-to-use inflation database. It provides inflation data in digestible formats for countries across the world. These data are provided over each decade from 1950 to 2000. Along with annualized inflation over the decade, we find the cumulative inflation, value of one monetary unit at the end of the decade, and the change in inflation. The dataset used for all reports can be downloaded as an Excel file on the Cato Institute website.

This series repackages the work previously published in 2014 by Prof. Steve H. Hanke and Nicholas Krus<sup>1</sup> to include choropleths, digitized data, and a basic discussion and analysis of trends.

## About the Authors<sup>2</sup>

**Steve H. Hanke** is a Professor of Applied Economics and co-director of the Institute for Applied Economics, Global Health, and the Study of Business Enterprise at the Johns Hopkins University in Baltimore, MD. He is also a Senior Fellow and Director of the Troubled Currencies Project at the Cato Institute in Washington, D.C. On his Twitter, @Steve\_Hanke, Prof. Hanke regularly posts about economic and financial news.

**Tal Boger** is the first high school research assistant at the Johns Hopkins University Institute for Applied Economics, Global Health, and the Study of Business Enterprise. He is a rising senior at Beth Tfiloh Dahan Community High School, and will graduate in June 2019. He can be reached by email at: tboger10@gmail.com

## Methodology

We obtained the data presented in this report from three sources. We used the IMF's International Financial Statistics (IFS) most often. If data were not available via the IFS, we used the World Bank Development Indicators (WBDI). Finally, if data were not available via the IFS or the WBDI, we used data from the Economist Intelligence Unit's Online Database (EIU).

Utilizing these data, we calculated the cumulative inflation rate, the annualized inflation rate, the value of the monetary unit, and the change in the annualized inflation rate. We did so using the following formulas:

$i_x$  = the annual inflation rate for the xth year in the decade

1. Cumulative inflation rate =  $[(1 + i_1) * (1 + i_2) * \dots * (1 + i_{10})] - 1$
2. Annualized inflation rate =  $(\text{cumulative inflation rate} + 1)^{1/10} - 1$
3. Change in annualized inflation rate = (annualized inflation rate in the current decade – annualized inflation rate in the previous decade)
4. Value of 1 monetary unit at the end of the decade =  $1 / (1 + \text{cumulative inflation rate})$

Plotly was then used to create the choropleths.

Only countries that had inflation data available for the entire decade were included in this study to remove any confusion or bias in the table.

<sup>1</sup> See Steve H. Hanke and Nicholas Krus *Inflation by the Decades*, Cato, 2014. Available on the Hanke-Krus “World Inflation and Hyperinflation Table” page on the Cato Institute website (<https://www.cato.org/research/world-inflation-and-hyperinflation-table>).

<sup>2</sup> Copyright © 2018 by Steve H. Hanke and Tal Boger. This work may be reproduced provided that no fee is charged and the original source is properly credited. All charts and choropleths are created by the authors unless otherwise specified.

# Introduction

## Key Findings

For the 2000s, we recorded inflation data for 190 countries and territories.<sup>3</sup>

Previously, Latin America seemed to suffer most from inflation. However, economic policy throughout the decade reduced the elevated inflation rates which plagued them throughout the late 20<sup>th</sup> century.

With Latin America escaping its elevated inflation, Sub-Saharan Africa became the most inflationary region. Countries in Eastern Europe, the Middle East, and the Balkans also experienced high inflation rates.

Specifically, Zimbabwe had an infamous case of hyperinflation. From March 2007 to mid-November 2008, Zimbabwe hyperinflated, with daily rates reaching 98.0% in the last month. At its peak, it took a mere 24.7 hours for prices to double.<sup>4</sup>

Throughout the decade, 35 countries had annualized inflation rates of over 20%, and 90 countries had a rate over 10%.

## World Inflation Choropleth

Figure 1 below shows the annualized inflation in the 2000s of every country and territory for which we recorded data. Note that we removed Zimbabwe from this choropleth even though we recorded inflation data for it. Zimbabwe's annualized inflation of about 58,000% distorts the colorscale, making it impossible to differentiate between any two countries. Therefore, for increased clarity, we decided not to include Zimbabwe in the choropleth.

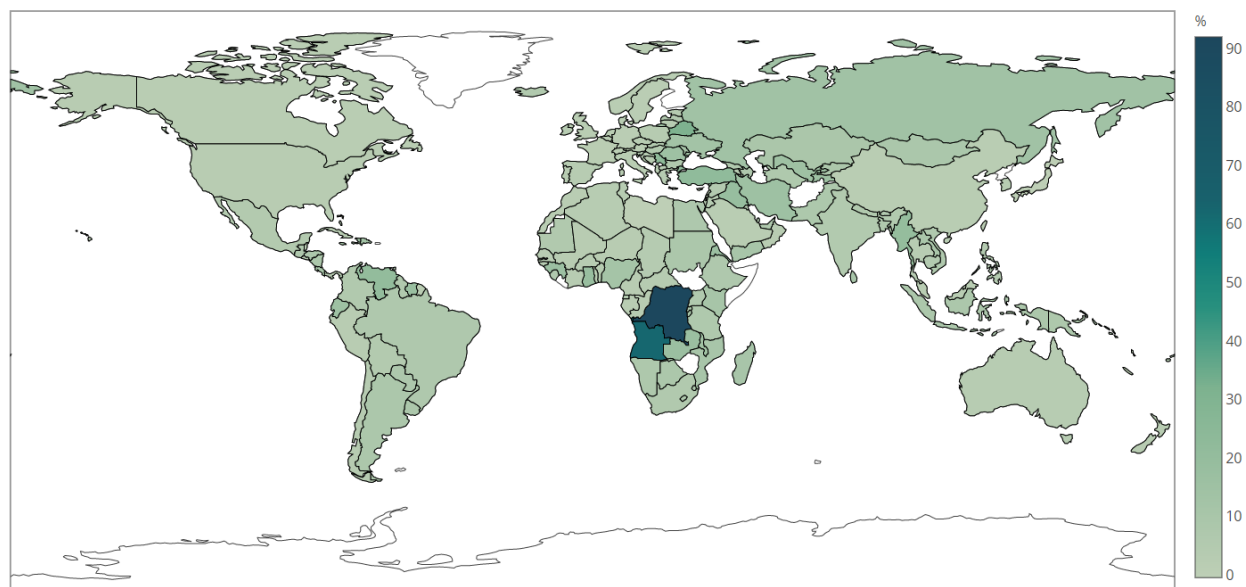


Figure 1. World annualized inflation in the 2000s.

<sup>3</sup> Unless otherwise specified, inflation data is throughout the whole decade.

<sup>4</sup> For more information, see: Steve H. Hanke and Alex Kwok (2009) *On the Measurement of Zimbabwe's Hyperinflation*, *Cato Journal*, Vol 29, No. 2.

# Africa

## Summary

In Africa, we measured the inflation for 50 countries. The average inflation for the entire continent was 1,188.22%. However, this high figure is due to Zimbabwe's hyperinflation. Excluding Zimbabwe, the average inflation was 9.81%. The continent's annualized inflation had a standard deviation of 15.08%. Even without Zimbabwe's hyperinflation, the Democratic Republic of the Congo and Angola significantly raise the average; their inflation rates were measured at 91.97% and 62.40%, respectively. These two annualized inflation figures ranked 2<sup>nd</sup> and 3<sup>rd</sup> in the world, respectively, only behind Zimbabwe. Therefore, all three countries with the highest inflation in the world in the 2000s were in Africa.

## Choropleth of African Inflation

Figure 2 below shows the annualized inflation of countries in Africa.<sup>5</sup>

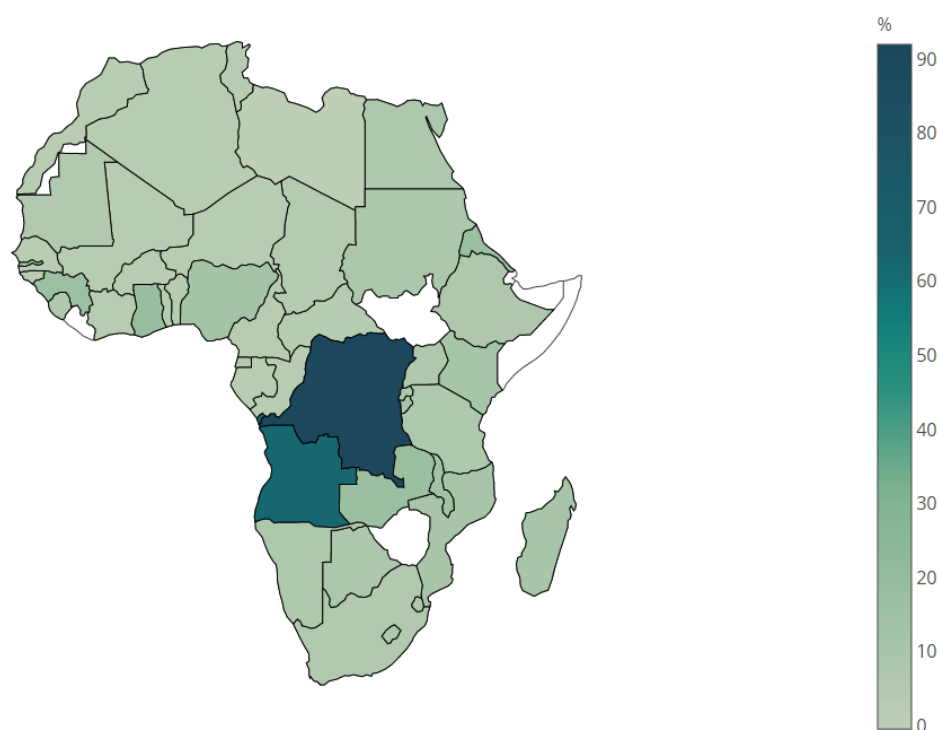


Figure 2. Africa annualized inflation in the 2000s.

## Zimbabwe's Hyperinflation Summary

Zimbabwe hyperinflated during this period, specifically between 2007 and 2008. Overall in the decade, Zimbabwe's annualized inflation was 58,930.26%, 640 times more than the second most inflationary country during this period.

One of us (Hanke) used purchasing power parity to provide the only accurate estimates of Zimbabwe's inflation after the Mugabe government stopped reporting inflation data.

<sup>5</sup> Like in the world inflation choropleth, we removed Zimbabwe from this figure for clarity.

## Zimbabwe's Hyperinflation Analysis

Zimbabwe's hyperinflation is the first hyperinflation since Bulgaria in 1997. Pushing many of its citizens into poverty, Zimbabwe's hyperinflation ravaged its economy. Between 2000 and 2010, we measured Zimbabwe's cumulative inflation at 513 octillion (513 followed by 27 zeros) percent.

Furthermore, living standards (which we chose to measure by real gross domestic product) declined by 38% over this same period. Along with high inflation and worsened living standards, Zimbabwe's hyperinflation looted people of their savings and financial institutions of their capital.<sup>6</sup> This hyperinflation was caused by government fiscal policies that forced the Reserve Bank of Zimbabwe (RBZ) to expand the money supply.

The hyperinflation ultimately stopped due to spontaneous unofficial dollarization in November 2008. Zimbabwe's dollarization became official in January 2009. Although Zimbabwe seemed to be trending in the right direction following this terrible period of inflation, it has recently started to return to its old ways. Indeed, in October 2017, Zimbabwe entered its second hyperinflation episode in less than ten years.<sup>7</sup>

As such, Zimbabwe's hyperinflation, specifically in mid-November 2008 was the second highest we have ever recorded, behind only 1945 Hungary. During this period of hyperinflation, it took only 24.7 hours for prices to double.<sup>8</sup> In Hungary, the doubling of prices took 15.0 hours.

Figure 3 below shows the daily inflation rate of the countries with the top 10 highest hyperinflation episodes ever, as recorded in the World Hyperinflation Table.<sup>9</sup>

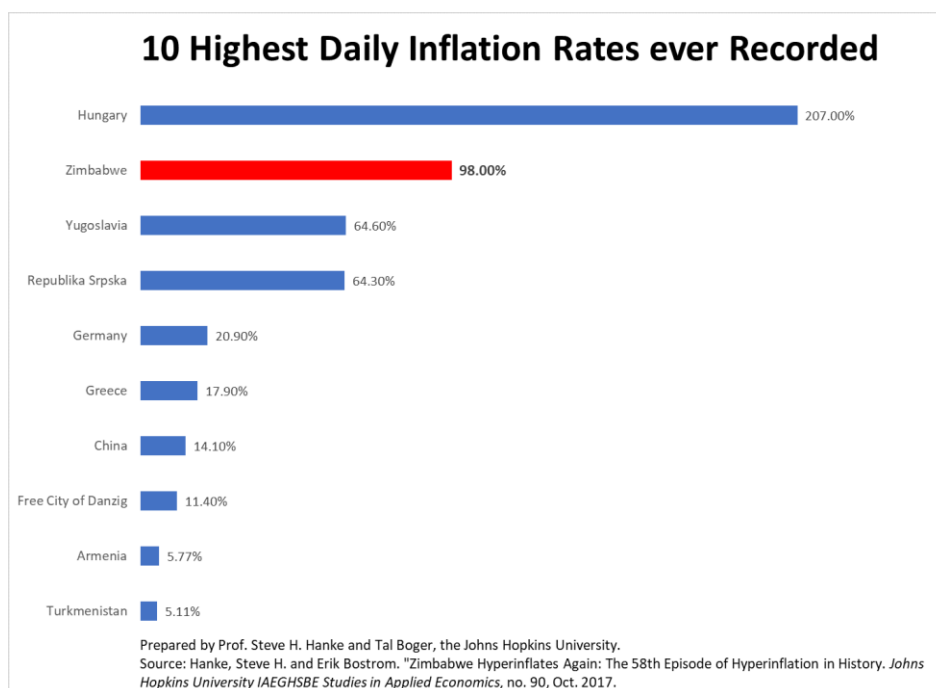


Figure 3. Zimbabwe (in red) and the ten highest episodes of hyperinflation.

<sup>6</sup> See Steve H. Hanke *How to Kill Zimbabwe's Hyperinflation*, Global Dialogue, August 2008.

<sup>7</sup> See Steve H. Hanke and Erik Bostrom *Zimbabwe Hyperinflates Again: The 58th Episode of Hyperinflation in History*, working paper no. 90 in Johns Hopkins University's "Studies in Applied Economics" working paper series.

<sup>8</sup> See the latest World Hyperinflation Table. Hanke-Bostrom *Zimbabwe Hyperinflates Again: The 58th Episode of Hyperinflation in History*, as mentioned above (footnote 7).

<sup>9</sup> The original hyperinflation table first appeared in *The Routledge Handbook of Major Economic Events* (2013) by Steve H. Hanke and Nicholas Krus, and is available [here](#).

# South America

## Summary

In South America, we measured inflation for all 12 countries in the continent. The average inflation was 9.11%, with a standard deviation of 5.78%. Annualized inflation ranged from a high of 20.91% in Venezuela to a low of 2.59% in Peru. The countries highest in our world rankings were Venezuela (7<sup>th</sup>), Suriname (11<sup>th</sup>), and Ecuador (18<sup>th</sup>). Compared to previous decades, this average inflation and world ranking is low.

## Choropleth of South American Inflation

Figure 4 below shows the annualized inflation of every country in South America.

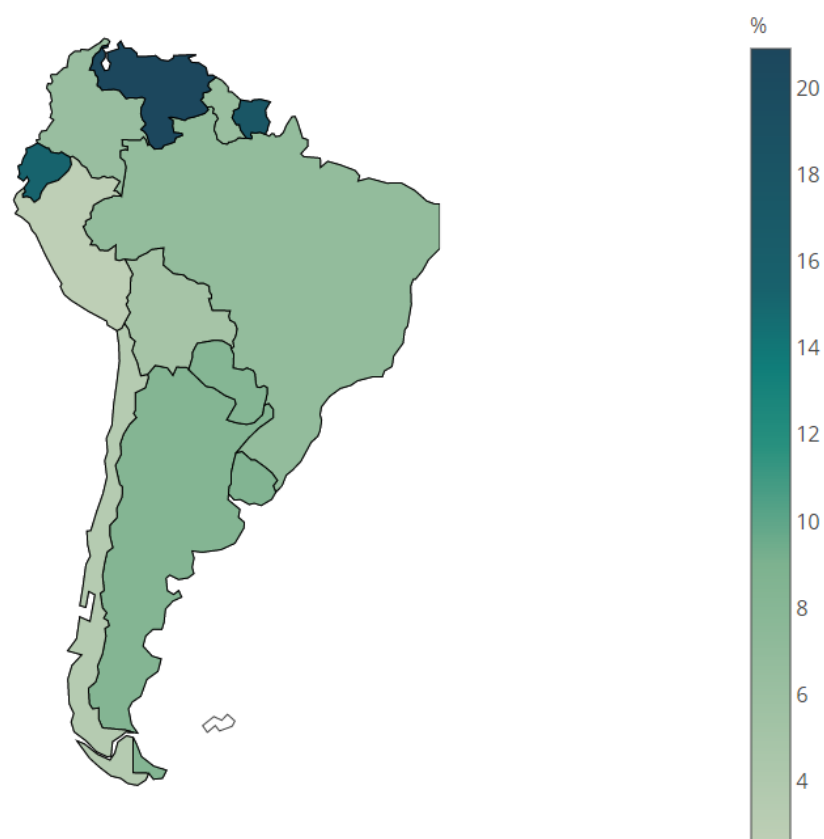


Figure 4. South America annualized inflation in the 2000s.

## Venezuela Hyperinflation Summary

Although Venezuela's hyperinflation occurred after the 2000-2010 period, we have included it given that it is important to discuss the hyperinflation, but we do not have a dataset past 2010.

According to our most recent reading (late January 2018), Venezuela's annual inflation stands at 6,605%. At present, one of us (Hanke) provides the only accurate measurements of Venezuela's inflation.<sup>10</sup>

<sup>10</sup> See Steve H. Hanke and Charles Bushnell *On Measuring Hyperinflation: Venezuela's Episode*, World Economics Vol. 18, No. 3, July-September 2017 (available [here](#)).

## Venezuela Hyperinflation Analysis

Venezuela's annualized inflation of 46.20% was the highest of any South American country. At the end of the decade, its currency, the bolivar, was worth only 15% of its initial value in 1999.

In 1999, Hugo Chávez became the leader of Venezuela. His reckless economic policy placed Venezuela on the path to its poor economic state today.

During his time as leader (1999 until his death in 2013), Chávez's policies limited free markets and democracy; he nationalized many industries and put in place price controls.<sup>11</sup> He even replaced the professionals at PDVSA (Venezuela's national oil company) with his supporters.<sup>12</sup> With Venezuela's economy largely dependent on oil, Chavez was able to keep some support because of the high price of oil.

However, once oil prices started to plummet in mid-2013 and Chavez died (and his replacement, Nicolás Maduro continued many of his policies), Venezuela's economy started to crumble. On December 3<sup>rd</sup>, 2016, it became the most recent entry in the Hanke-Krus hyperinflation table. At present, Venezuela remains in the group of hyperinflation

This hyperinflation "is like a hurricane," as chaos has ensued in Venezuela.<sup>13</sup>

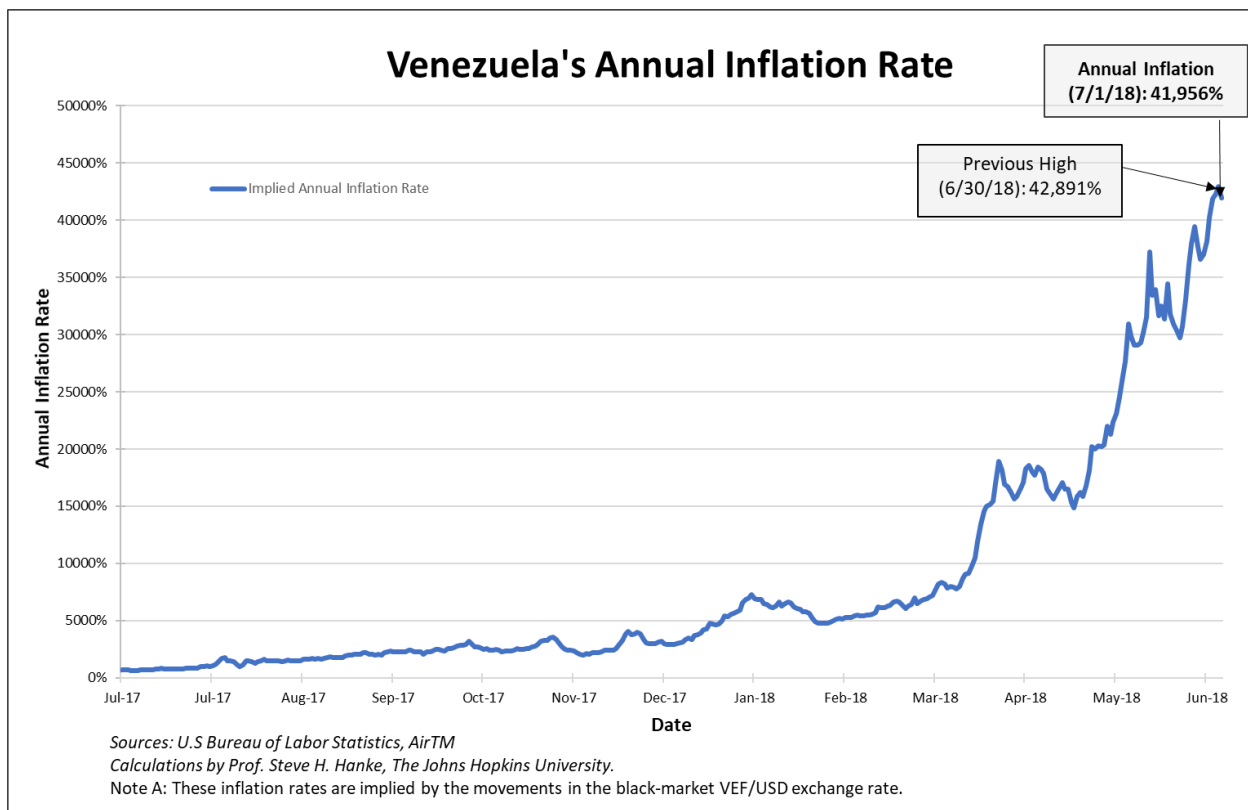


Figure 5. Venezuela's annual inflation rate as of July 1, 2018.

<sup>11</sup> See José Niño *Venezuela's Economic Collapse: A Process 50 Years in the Making*, The Libertarian Republic, 9 June 2016 for an economic history of Venezuela.

<sup>12</sup> See Steve H. Hanke *Venezuela's PDVSA: The World's Worst Oil Company*, Forbes, 6 March 2017 for more information on PDVSA.

<sup>13</sup> See Noah Smith *Venezuela Is Living a Hyperinflation Nightmare*, Bloomberg, 19 December 2017.



# North America (including Central/Caribbean)

## Summary

In North America, we measured inflation for all 23 countries. The average inflation for the entire continent was 5.30%, with a standard deviation of 3.86%. Annualized inflation ranged from a high of 14.87% in Haiti to a low of 1.86% in Antigua. The average inflation for the continent was the second lowest out of the six continents; only Australia's average annualized inflation was lower. The countries highest in our world rankings were Haiti (21<sup>st</sup>), Jamaica (28<sup>th</sup>), and Costa Rica (29<sup>th</sup>).

## Visualizations of North American Inflation

Because North America is a large continent, with most of its land mass composed of the United States, Canada, and Mexico, it is difficult to see the inflation of Central American and Caribbean countries. So, we have split these up into two different figures. First, we have a choropleth of all of North America. To visualize inflation in Latin America and the Caribbean, we have a color coded dataset according to the severity of the country's inflation.

Figure 6 below is a choropleth of mainland North America's inflation in this decade.



Figure 6. North America annualized inflation in the 2000s.

Figure 7 on the following page is the colorscale of Latin American and Caribbean inflation. The colorscale goes from white for the lowest inflation, light green for the middle inflation, and a darker green for the most inflationary countries.

The US, Canada, and Mexico are excluded from this visualization given that its primary focus is Latin America and the Caribbean

Country	Annualized Inflation
Haiti	14.87%
Dominican Republic	12.27%
Jamaica	11.01%
Costa Rica	10.89%
Nicaragua	8.59%
Honduras	8.23%
Guatemala	7.00%
Trinidad and Tobago	6.26%
Barbados	3.70%
El Salvador	3.54%
Saint Kitts and Nevis	3.46%
Saint Vincent and the Grenadines	2.98%
Grenada	2.85%
Cuba	2.72%
Saint Lucia	2.58%
Belize	2.50%
Panama	2.37%
Bahamas	2.28%
Dominica	1.99%
Antigua	1.86%

Figure 7. Latin America and the Caribbean annualized inflation in the 2000s.

## Europe

### Summary

In Europe, we measured inflation for 41 countries. The average inflation for the entire continent was 5.30%, with a standard deviation of 6.10%. Annualized inflation ranged from a high of 31.57% in Belarus to a low of 0.95% in Switzerland. Notably, Bulgaria escaped its hyperinflation in 1997 with the installation of a currency board and posted an annualized inflation rate of only 6.74%.<sup>14</sup> Bulgaria's hyperinflation in 1997 is the most recent hyperinflation after Zimbabwe's. This hyperinflation will be analyzed in the 1990's Inflation by the Decades report. The countries highest in our world rankings were Belarus (4<sup>th</sup>), Serbia (5<sup>th</sup>), Romania (17<sup>th</sup>).

### Choropleth of European Inflation

Figure 8 on the following page is a choropleth of Europe's annualized inflation in this decade.

Note that Russia is included in both this choropleth and in Asia's choropleth. Also note that Asian countries with European territory (Georgia, Turkey, etc.) are excluded.

<sup>14</sup> For more information on Bulgaria's hyperinflation, see either the previous *Inflation by the Decades* report (for the 1990s) or see Steve H. Hanke *Bulgaria: Fifteen Years Later*, working paper no. 2 in Johns Hopkins University's "Studies in Applied Economics" working paper series.

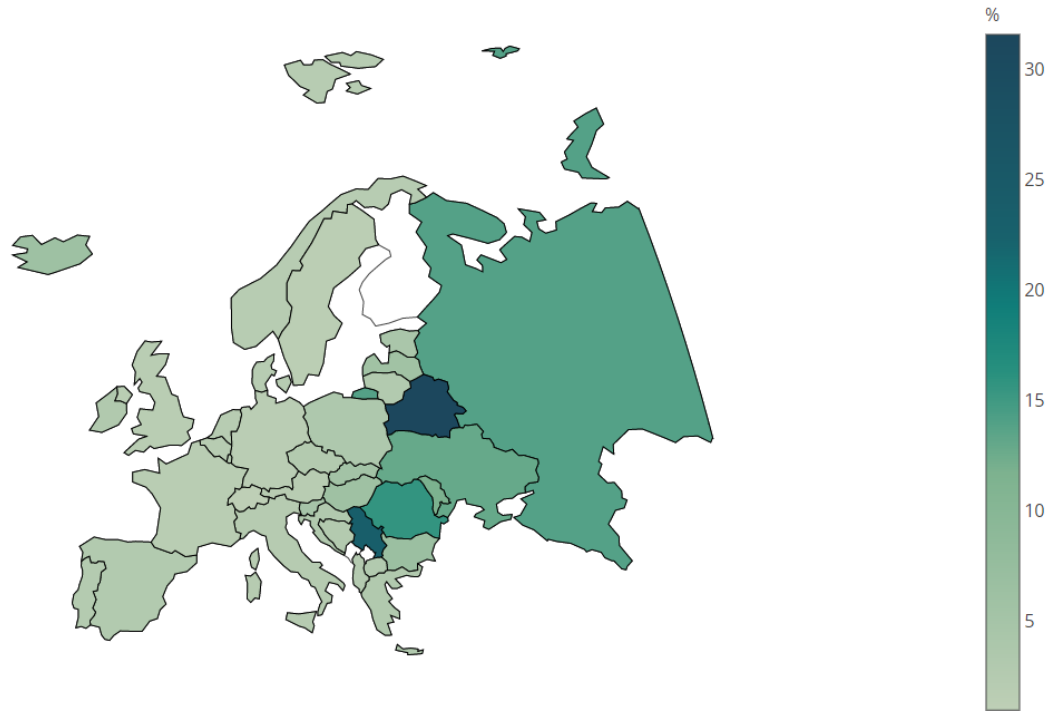


Figure 8. Europe annualized inflation in the 2000s.

## Asia

### Summary

In Asia, we measured inflation for 41 countries. The average inflation for the entire continent was 7.06%, with a standard deviation of 5.58%. Annualized inflation ranged from a high of 22.26% in Turkey to a low of -0.26% in Japan.

In the previous decade, several countries in the Soviet Union such as Turkmenistan, Kazakhstan, Georgia, and Kyrgyzstan hyperinflated after the fall of the USSR. This hyperinflation was largely caused by a lack of fiscal and monetary control, which resulted in a rough transition from a communist economy to a market economy.

Ultimately, these Soviet countries transitioned over time. In this decade, they were not the most inflationary countries in Asia; they were mostly spread out among the upper half of the annualized inflation. The countries highest in our world rankings were Turkey (6<sup>th</sup>), Myanmar (8<sup>th</sup>) and Iraq (9<sup>th</sup>).

### Choropleth of Asian Inflation

Figure 9 on the following page is a choropleth of Asia's annualized inflation in this decade.

As mentioned in the overview, we excluded countries that did not have inflation data for the entirety of the decade. Therefore, for example, Afghanistan is not in this heatmap because its inflation data begins only in 2005.

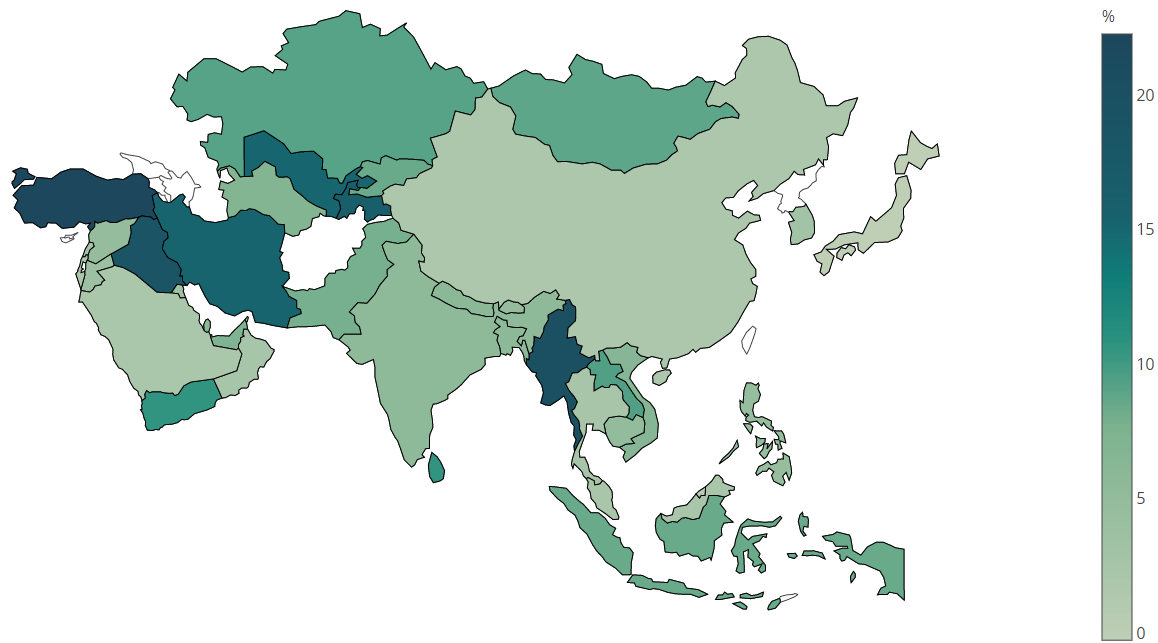


Figure 9. Asia annualized inflation in the 2000s.

## Australia

### Summary

In Australia, we measured inflation for 11 countries. There is some debate over whether the continent of Australia has only 3 countries<sup>15</sup> (Australia, New Zealand, and Papua New Guinea) or about 11-14 (if islands such as Fiji are included).<sup>16</sup> Because we found data for these small island nations, we decided to include them in our analysis for Australia. The average inflation for the entire continent was 4.62%, with a standard deviation of 2.49%, both the lowest out of any continent. Annualized inflation ranged from a high of 9.12% in the Solomon Islands to a low of 2.21% in Tuvalu. The countries highest in our world rankings were the Solomon Islands (38<sup>th</sup>), Tonga (50<sup>th</sup>) and Papua New Guinea (54<sup>th</sup>).

### Visualization of Australian Inflation

Because most of the countries in Australia are very small, it would be almost impossible to see them on a choropleth. So, we have used the same method we used for the Latin American and Caribbean countries in North America.

We created a color scale of the data. The countries with the lowest inflation are in white. The middle countries are marked in a light green, and the light green turns darker for the countries as the countries have higher inflation.

Figure 10 on the following page is the annualized inflation for Australia on a three-color scale.

<sup>15</sup> Some who believe Australia is composed of very few countries consider it to be four countries; the three listed along with Indonesia.

<sup>16</sup> According to Worldometers.info, a website offering various data on many countries in the world, Australia is composed of 14 countries. We consider there to be 11 countries, which are listed in the colorscale on the following page. Inflation data for territories is available in the full Inflation by the Decades dataset on the Cato website.

Country	Annualized Inflation
Solomon Islands	9.12%
Tonga	7.97%
Papua New Guinea	7.50%
Samoa	5.73%
Fiji	3.40%
Australia	3.16%
Kiribati	3.14%
Federal States of Micronesia	3.07%
Vanuatu	2.87%
New Zealand	2.64%
Tuvalu	2.21%

*Figure 10. Australia annualized inflation in the 2000s.*

## References

- Hanke, Steve H. and Alex Kwok. "On the Measurement of Zimbabwe's Hyperinflation." *Cato Journal*, vol. 29, no. 2, 2009, pp. 353-364.
- Hanke, Steve H. and Charles Bushnell. "On Measuring Hyperinflation: Venezuela's Episode." *World Economics*, World Economics, vol. 18, no. 3, Sep. 2017, [http://sites.krieger.jhu.edu/iae/files/2018/02/Hanke-Bushnell\\_Venezuela.pdf](http://sites.krieger.jhu.edu/iae/files/2018/02/Hanke-Bushnell_Venezuela.pdf).
- Hanke, Steve H. and Erik Bostrom. "Zimbabwe Hyperinflates Again: The 58<sup>th</sup> Episode of Hyperinflation in History." *Studies in Applied Economics*, Johns Hopkins University Institute for Applied Economics, Global Health, and the Study of Business Enterprise, no. 90, 2017, <http://sites.krieger.jhu.edu/iae/files/2017/10/Zimbabwe's-Hyperinflates-Again-Hanke-Bostrom-Cover-Page-Paper.pdf>.
- Hanke, Steve H. and Nicholas Krus. "Inflation by the Decades." *Cato Institute*, 2014, <https://www.cato.org/research/world-inflation-and-hyperinflation-table>.
- Hanke, Steve H. and Nicholas Krus. "World Hyperinflations," *Routledge Handbook of Major Events in Economic History*, Edited by Randall Parker and Robert Whaples. London, Routledge, 2013.
- Hanke, Steve H. "Bulgaria: Fifteen Years Later." *Studies in Applied Economics*, Johns Hopkins University Institute for Applied Economics, Global Health, and the Study of Business Enterprise, no. 2, 2012, [http://sites.krieger.jhu.edu/iae/files/2017/04/Working\\_Paper\\_Hanke\\_Bulgaria\\_Fifteen\\_Years\\_Later.pdf](http://sites.krieger.jhu.edu/iae/files/2017/04/Working_Paper_Hanke_Bulgaria_Fifteen_Years_Later.pdf).
- Hanke, Steve H. "How to Kill Zimbabwe's Hyperinflation." *Global Dialogue*, Aug. 2008.
- Hanke, Steve H. "Venezuela's PDVSA: The World's Worst Oil Company." *Forbes*, 6 Mar. 2017, <https://www.forbes.com/sites/stevehanke/2017/03/06/venezuelas-pdvsa-the-worlds-worst-oil-company/>.
- Hanke, Steve H. "Zimbabwe, from Disaster to Disaster." *Forbes*, 31 Jul. 2017, <https://www.forbes.com/sites/stevehanke/2017/07/31/zimbabwe-from-disaster-to-disaster/#352ee8c4221a>.
- "How Many Countries in Oceania?" *Worldometers*. Dadax, 2017, <http://www.worldometers.info/geography/how-many-countries-in-oceania/>.
- Niño, Jose. "Venezuela's Economic Collapse: A Process 50 Years in the Making." *The Libertarian Republic*, 9 Jun. 2016, <http://thelibertarianrepublic.com/venezuelas-economic-collapse-a-process-50-years-in-the-making/>.