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ANALYSIS OF THE ZIMBABWEAN HYPERINFLATION CRISIS: A SEARCH FOR
POLICY SOLUTIONS

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ABSTRACT

Zimbabwe's current struggles embody the worst outcomes of economic mismanagement. Hyperinflation has reached some of the highest levels ever seen, leading to falling standards of living and total disruption of the marketplace. There is much arguing about the cause and blame for the nation's downturn, but most importantly there is a need for solutions.

The hyperinflationary theory developed earlier in the 20th century aptly describes the causes of Zimbabwe's problems at fundamental level, with money creation serving as the primary driver. More recent research details how countries with high inflation have stabilized their currencies, though their inflation is of lower magnitude than Zimbabwe's. Both qualitatively and quantitatively, Zimbabwe's lead-up to hyperinflation fits the mold of a modern high inflation incident, while its climax recalls the most severe WWI-era cases.

Zimbabwe's unique political situation also complicates the process of economic stabilization. President Mugabe's regime is nearly immune to external pressure, so any change in policy will have to come from within his party, or from a rival organization that manages to gain power. Numerous researchers have presented plans for recovery once a willing government is in place, but that is a great hurdle to clear.

In the near future, it is likely that foreign currencies will play an increasing role in the Zimbabwean marketplace. As the Zimbabwean dollar is gradually replaced for daily transactions, the harsh effects of hyperinflation will be mitigated. Whether the Zimbabwean dollar is officially replaced or made obsolete by dollarization, it seems unlikely that Zimbabweans will embrace their national currency again.

Given the more devastating downturn of the real economy, it is unlikely that Zimbabwe can make as quick of a recovery as its hyperinflationary ancestors of the early 20th century. On the other hand, it seems quite possible for Zimbabwe to *begin* its recovery as quickly as those nations. Zimbabwe has dug itself a deep hole, but with proper leadership, it could once again become an economic power of the African continent.

Table of Contents

Introduction.....	1
Hyperinflation Theory	3
Early Analysis.....	3
Recent Analysis	7
The Situation in Zimbabwe	12
Independence and Reform	12
Decline Into Hyperinflation.....	15
Tracking Inflation	19
Reactions to Hyperinflation.....	20
Historical Cases of Hyperinflation	24
Early Cases	24
Recent Cases.....	27
Research on the Zimbabwean Hyperinflation	32
Policy Conclusions	39
Appendix.....	44
Bibliography	45

Introduction

Zimbabwe's current struggles embody the worst outcomes of economic mismanagement. Hyperinflation has reached some of the highest levels ever seen, leading to falling standards of living and a totally malfunctioning marketplace. There is much arguing about the cause and blame for the nation's downturn, but most importantly there is a need for solutions. Without a solid stabilization plan, hyperinflation will continue to destroy both individual welfare and regional stability in sub-Saharan Africa. This thesis aims to provide a better understanding of current and historical examples of hyperinflation, and draw foundational conclusions and recommendations that can provide a basis for policy solutions to this crisis.

The format of my thesis consists of several broad sections, each divided into more specific detail. The first section outlines the mechanics of hyperinflation and its related causes and effects. This includes explanations of the classic theories of hyperinflation, as well as discussions of more recent research in the field.

The second section summarizes Zimbabwe's history and recent struggles. In addition, the role of international lending groups like the IMF and the World Bank is briefly addressed.

The third section surveys past episodes of hyperinflation, including their historical background and the effectiveness of any solutions that were implemented. These past crises are roughly divided between those occurring before 1950, and those from the last 30-odd years.

The fourth section of the thesis presents some of the findings from previous research on the Zimbabwean crisis, looking at the areas where a consensus has formed,

and those where economists are in disagreement. The summary focuses on policy-oriented research.

The fifth and concluding section draws from the previous four to formulate a set of recommendations aimed at ending the hyperinflation in Zimbabwe and orchestrating a successful recovery. This is not a single conclusion, but rather a variety of steps that could be taken to improve the situation, based on the amount of commitment and cooperation between the involved governments and organizations.

Hyperinflation Theory

Far from unique, Zimbabwe is just the most recent nation to suffer from hyperinflation. It is joining an infamous club of governments whose policies have fallen into a familiar trap. The results differ so widely from traditional economic behavior that they have established an area of study where new theories were created to explain the previously unseen phenomena. The earliest studies in this area were published in response to the failing financial systems of post-WWI Europe. These classic papers and books outlined the core mechanics of hyperinflation, and still serve as the backbone for any analysis. Of course, as world finance continues to evolve, economists have developed new methods of analysis and explanations for today's economic mismanagement. In this section, I will outline the traditional models of hyperinflation, along with the updated perspectives of modern economists. All of these models are based on information learned from historical failures in central banking. To better understand these lessons, I will describe the unique and shared traits of various monetary failures of the past.

Early Analysis

Often cited as the foundation of hyperinflationary studies, Phillip Cagan's "The Monetary Dynamics of Hyperinflation" (1956) was one of the first works to spell out the root causes and effects of hyperinflation with mathematical rigor. Cagan studied the extreme inflation that occurred in nations on the losing side of World War I. The Allied nations demanded large reparations from these war-torn nations, at a time when many were reorganizing their governments. The combination of large debt and weak tax enforcement led to the use of changes in the money supply to finance the state.

Cagan defines hyperinflations as “beginning in the month the rise in prices exceeds 50 per cent and ending in the month before the monthly rise in prices drops below that amount and stays below for at least a year” (Cagan, 1956, pg. 25). The equivalent annual inflation rate is 12,975 percent. This definition has become an accepted standard within the research community.

By looking at periods when inflation reached unfathomably high levels, Cagan was able to isolate minor influences on inflation from the primary cause. By doing so, he was able to conclude that growth in the quantity of money is the root cause of price growth. However, linear increases in the quantity of money (M) will not cause a proportional jump in prices (P). This is due to changes in real cash balances, calculated as M/P (Cagan, 1956). These balances represent the real value of all of the money held in the economy. The focus of Cagan’s work was to determine how changes in real cash balances affect hyperinflation.

In the early stages, hyperinflation usually leads to increased real cash balances, as the rise in prices does not keep up with the rise in money supply. This is because of the initial expectation that prices will eventually return to normal levels. If the inflation fails to slow over time, the public will have a new expectation that prices will continue to increase. This leads to a flight from currency, and the corresponding decrease in real cash balances. Though the quantity of money may be increasing faster than ever, people will have greatly increased demand for consumer goods that retain their real value relative to their quickly devaluing printed money. This increased demand causes price increases to outstrip money increases, lowering the real value of cash even as it becomes more plentiful (Cagan, 1956).

The expectation of future price change proves to be the key variable in determining the demand for real cash balances. The expected rate of change in prices is in turn constantly revised by evaluating the difference between the actual rate of change and expected rate of change for previous price periods. This relationship is expressed by the equation

$$\left(\frac{dE}{dt}\right)_t = \beta(C_t - E_t),$$

where C_t represents the actual change in prices, E_t is the expected value of C_t , and β is a constant representing the lag in the adjustment of expectations (Cagan, 1956, pg. 37).

There are important deviations from this rule, such as the sharp decline in price growth that often accompanies news of monetary reform (Sargent, 1982). Still, for the duration of the hyperinflationary period, the flight from currency caused by price expectations has a critical impact on the course of money creation, and on the eventual collapse of the currency.

As mentioned earlier, money creation is most often used to finance government spending when traditional taxation fails to cover expenditures. The failure of traditional taxation during high inflation periods is known as the Olivera-Tanzi effect. Outlined independently in a pair of papers by Julio Olivera (1967) and Vito Tanzi (1977), the effect essentially occurs because of the deterioration of a currency's real value during the time between the assessment of the public's tax burden, and the eventual collection of that nominal amount. This effect occurs under any level of inflation, but can be accounted for with increased tax rates as long as the inflation rate is predictable. In a scenario of extreme price volatility, the nation must find a more reliable source of revenue, which usually takes the form of money creation through the mechanism described below.

In a process commonly known as the inflation tax, new revenue is produced by transferring the loss in value of the money already held in the economy to newly created value for the money printed by the government. Cagan (1956, p. 78) lays out a set of formulas for calculating this revenue, which depend on both the magnitude of the price change and the current value of real cash balances. He explains the inflationary income as a “tax on cash balances,” with the tax rate equal to the rate of depreciation (rate of rise in prices), and the tax base equal to the real cash balances. The revenue is the product of the base and the rate, yielding

$$\text{Tax Rate} = \frac{dP}{dt} \frac{1}{P}$$

$$\text{Tax Base} = \frac{M}{P}$$

$$\text{Revenue} = \frac{M}{P} \left(\frac{dP}{dt} \frac{1}{P} \right).$$

Another way of thinking about the process is by calculating revenue as the value of the new money being issued,

$$\text{Value of New Money} = \frac{dM}{dt} \frac{1}{P},$$

minus the reduction in value of the real cash balances already held in the market, represented as

$$\text{Reduction in Value of Cash Balances} = -\frac{d\left(\frac{M}{P}\right)}{dt}.$$

While most of this revenue was used for government expenditures, some would be distributed to banks to ensure available credit. Though this transfer initially benefited the banks, they would quickly give the wealth back to the public by offering loans at interest

rates that did not account for ever-rising prices. Banks too were susceptible to the incorrect expectations that produced government revenue.

The key to creating revenue is that the increase in price created by the growth of the money supply must be larger than the expected change in the price level. In this sense, it is not the rate of price increase that determines government revenue, but rather the upward trend of price increases (mathematically, the second derivative of price with respect to time) (Cagan, 1956). In his paper “The Ends of Four Big Inflations,” Thomas Sargent (1982) came to the same conclusions as Cagan, with each noting the specific pattern of price increases in post-WWI hyperinflations. Each nation was able to extract large revenues from its populace during the early stages of price increases by taking advantage of the lags in expectations of cash holders. In the middle, transitional stage of hyperinflation, revenues fell as the public’s expectations caught up with the actual price changes. In the final, most disruptive stage of hyperinflation, the central banks were forced to print currency and raise prices at an ever-increasing rate in order to stay ahead of expectations. This succeeded for a short time, until the unsustainable inflation rates made currency worthless as soon as it was produced (Cagan, 1956 and Sargent, 1982). This two-humped pattern was consistent for all of the hyperinflations studied by Cagan and Sargent, and the fundamental ideas of price change expectations and real cash balances continue to be used in analysis of modern hyperinflations.

Recent Analysis

As times have changed, the tools and focus of hyperinflation studies have adapted. Researchers in this field have used statistical methods to search for relationships between every possible variable. The newer analysis seems to rely more on linear

regression and tests for significance than on the calculus and mathematical proofs of Cagan. In addition, current research is often more policy-oriented, which makes it very relevant to this paper's objectives. In this section, I will summarize some of the recent work in the field of hyperinflation. In particular, I will review the paper "Modern Hyper- and High Inflations" by Fischer et al. (2002), which provides an overview of topics currently being researched, along with useful findings of its own.

As seen by the title of their paper, Fischer et al. have broadened the scope of this area of research by investigating those countries with very high inflation, but not high enough to reach Cagan's hyperinflation threshold. To incorporate more cases, Fischer and his contemporaries have grouped together all economies with annual inflation above 100 percent. This more inclusive definition is representative of modern inflationary crises, which have often been more prolonged, but less severe, than those of the first half of the 20th century (Reinhart and Savastano, 2003).

Causality between inflation and money supply is one of the areas where recent research has separated itself from the more classic theories. By testing for Granger-causality between inflation and money supply, the consensus of hyperinflation research has shown that inflation causes (or predicts) growth in the money supply more than growth in the money supply causes inflation. Fischer et al. are quick to point out that these results "should not be interpreted as implying that, in some circumstances, inflation is not caused by money growth, or that inflation could not be stopped if monetary policy changed and money growth was reduced to a very low level" (2002, pg. 14). The most common explanation of the causality is based on fiscal deficits causing some degree of inflation, which in turn causes the government to print money in order to balance its

budget (Fischer et al., 2002). The idea of fiscal deficits as a cause of hyperinflation is not a new one, as Cagan (1956) and Sargent (1982) both addressed the huge reparations debts of the post-war as catalysts for their inflationary cycles.

At times, recent work has been aimed at further defining topics first outlined years ago. Inflationary inertia, described but not named by Sargent (1982), has become an area of serious quantitative research. The basic idea is that as price growth increases, money becomes less integrated with the economy, making a transition to a new currency and policy regime less costly. The hyperinflationary money becomes less integrated through shortening contracts and widespread acceptance of foreign currencies (Fischer et al., 2002, pg. 21). The shortened contracts means that lenders are unwilling to give long-term loans because of the concern that the money could be worthless by the time it is paid back. In the event of monetary reform, any contracts held in the market would need to be redefined in terms of the new currency and fiscal policy. Fewer contracts means fewer resources spent on unproductive transition costs, and a lower inflationary inertia. This inertia relationship has been tested with autoregression techniques yielding fairly promising results, but the data is still considered inconclusive.

Research on different nominal currency anchors is an area of study with particular relevance to Zimbabwe's ongoing hyperinflation. Nominal anchors are generally divided into two categories; money-based and exchange rate-based. Money-based stabilizations rely on creating a new, stable currency, whose supply cannot be increased without complete backing. This system inherently demands a balanced government budget, as borrowing is extremely restricted by the inability to raise revenue through changes in money supply. Exchange rate-based stabilizations peg the value of the national currency

to the value of a foreign currency. The country must then defend the strength of its currency by buying and selling it with foreign reserves, such that the peg remains fitted.

The question is whether one of these techniques creates a more beneficial (or less damaging) recovery than the other. The quantitative data presented by Fischer et al. (2002) supports a theory that exchange rate stabilizations provide a bump in output and consumption during the first two years after stabilization. This bump is then followed by a decrease in output, but the argument in favor of exchange rate stabilization emphasizes that the initial increase outweighs the eventual decrease, making it an expansionary stabilization technique (Fischer et al., 2002).

One of the counter-arguments to exchange rate stabilization stresses the different levels of resources needed to implement the two types of stabilization. In the paper “Does the Choice of Nominal Anchor Matter?” David Gould (1999) argues that the choice of stabilization type is not a free one, but is in fact dependent on the credibility and international reserves of the state. While he does not dispute that exchange rate stabilization provides an initial boost in output, Gould contends that over the course of several years, if the initial differences in resources are accounted for, the gains in GDP are equal for both types of stabilization. Overall, the choice of stabilization type is not clear-cut. It is just one example of a hyperinflation policy decision that must be analyzed in context to find the optimal solution.

The classic and modern theory outlined in this section will provide the background necessary to understand the ongoing hyperinflation in Zimbabwe as well as past episodes of hyperinflation. These historical cases will be examined with a focus on their differences and commonalities. The goal is to determine which governmental

actions allowed for the most stable transition from a hyperinflationary to a stable economy. In this manner, I will attempt to match the correct policy prescriptions to Zimbabwe's ailments.

The Situation in Zimbabwe

Just as Rome was not built in a day, Zimbabwe did not collapse in a day. Since its colonial founding as Rhodesia in the late nineteenth century, Zimbabwe has undergone many changes, some bringing prosperity, others suffering. To better understand the unraveling Zimbabwean economy, this section will detail the historical events that shaped the current situation. Every instance of hyperinflation is presaged by a confluence of bad luck and poor choices, and Zimbabwe's case is no exception. This section will briefly cover the colonial history of Zimbabwe, but focus more heavily on the era of Robert Mugabe's government.

Independence and Reform

For the first eighty-odd years of its colonial history, Zimbabwe¹ was heavily segregated with a white population that made up less than one percent of the population in sole control of the government. Deep divisions developed between black and white Zimbabweans through various government policies, with too many injustices to be detailed here. The unfair distribution of prime farmland, with 88 percent of agricultural output produced by white-owned farms, is one colonial legacy that does factor directly into the eventual collapse of the Zimbabwean economy (Harvey, 1996, pg. 6). Given the great inequalities of power and ownership, along with the populist rhetoric that they inspired amongst revolutionary leaders, it was inevitable that a new majority government would eventually take steps to put Zimbabwean land and resources into the hands of the

¹ Though known as Rhodesia and various other names during this period, the name Zimbabwe will be used throughout this paper to refer to all predecessor states of modern Zimbabwe.

black populace. The question was whether this would (or even could) be done in a stable manner.

Following a period of political unrest and guerilla military resistance in the 1970's, an agreement was reached between the revolutionary Patriotic Front, led by Robert Mugabe and Joshua Nkomo, and the Rhodesian government. Signed on December 21st of 1979, the Lancaster House Agreement brought universal suffrage to Zimbabwe, and Robert Mugabe's popularity as a revolutionary carried him to electoral victory and the presidency of the new government. To this day, his legacy as a fighter for black empowerment affords him respect and leniency from the Zimbabwean populace and fellow African leaders. The government, led by Mugabe's ZANU-PF party, had initial economic success, with growth averaging five percent from 1980 through 1990 (Mumvuma et al., 2006)². Still, by the late 1980's, there were signs of weakness in the current economic system, including foreign exchange shortages and growing government debt. Agriculture was Zimbabwe's strongest export industry, and it was badly hurt by falling international commodity prices and an improperly managed exchange rate (Mumvuma et al., 2006). As fiscal crisis loomed on the horizon, calls for reform became louder and louder. Pressure mounted on Mugabe's government internally from business leaders and white farming lobbyist groups, as well as externally from the IMF and the World Bank. They argued that privatization of Zimbabwe's state-owned corporations was the only way to increase efficiency and eliminate the fiscal deficit. Zimbabwe, which had traditionally followed socialist principles, changed philosophies and adopted a more

² Not all was well however, as Mugabe showed an early willingness to forcefully suppress opposition, most blatantly in the 1982 massacres in Matabeleland, an area in southern Zimbabwe heavily populated by supporters of rival revolutionary hero Joshua Nkomo (Simpson, 2008).

laissez faire approach to economic policy. The Economic Structural Adjustment Programme (ESAP) of 1991 embodied this transition.

Though proposed with noble goals, ESAP had serious errors in both its timing and planning. All economic issues, in one way or another, led back to the underlying problem of growing fiscal deficits and the government's inability to generate sufficient revenue. ESAP was intended to increase Zimbabwe's international competitiveness and its access to foreign exchange. Unfortunately, at the time of implementation, the Zimbabwean government did not have the necessary fiscal or regulatory infrastructure to cope with such a liberalization of the economy.

One of the chief errors of the reforms, according to Mumvuma et al. (2006) and E. A. Brett (2005), was the inability of the banking sector to provide financing to small businesses and individuals. Though inflation was never extreme during this period, the uncertainty of the reforms still created huge risk premiums on domestic loans. To avoid these costs, wealthier firms and individuals accessed foreign lending, lowering their own interest costs but further growing the fiscal deficit and forcing the national government to defend the strength of the Zimbabwean Dollar (Z\$).

The ability of the wealthy to take advantage of the reforms is a common theme. In the view of Mumvuma et al. (2006, p. 254), the main winners of the reforms were the "leading members of the business community, the ruling and emergent bureaucratic elite, particularly holders of financial assets (huge sums of foreign and local currency)" and the "large-scale commercial farmers who produced tobacco, paprika, cut flowers, vegetables, fruit and game meat mainly for the export market." This group had large membership of the nation's corrupt government officials and its historically advantaged white

population, a fact that was not lost on the increasingly dissatisfied poor and middle classes. For the common Zimbabwean, privatization was primarily felt through rising mortgage rates and costs of government services, which had now been stripped of their socialist subsidies. Overall, the reforms had produced “highly ambiguous economic results and massive political resentment manifested in growing industrial militancy, unrest in the civil service and a growth in the activities of many civic organizations” (Brett, 2005, p. 9).

Decline Into Hyperinflation

Through the early part of the 1990's, Mugabe's government had taken largely rational actions in an attempt to solve Zimbabwe's growing insolvency. As a whole however, ESAP failed to bring balance to government budget sheets. The reform's lack of tangible benefits for the general population put ZANU-PF on the defensive, with protesters and opposition groups gaining a meaningful foothold for the first time since the early 1980's. In the mid-1990's, Mugabe's regime largely abandoned its rational policymaking in favor of patronage and political bias. During this period, Zimbabwean leaders also promoted anti-Western rhetoric, particularly condemning the World Bank and the IMF for ruining the economy. While some of this criticism was warranted, with the institutions themselves admitting to mistakes (Mumvuma et al., 2006), Mugabe and his political allies would continue to use the policies of these institutions as excuses for poor performance that was solely attributable to internal mismanagement. It is debatable whether proper management could have avoided Zimbabwe's decline once it was this deep into fiscal crisis, but there is no doubt that the fall was greatly accelerated by the increasingly dishonest and short-sighted policies of ZANU-PF.

Those who have documented Zimbabwe's recent history have reached a strong consensus that the slide from a struggling economy to a collapsed economy was due largely to three policies: the unbudgeted payment of benefits to war veterans in 1997, military involvement in the Second Congo War in 1998, and the fast-track land reform program of 2000 (Mumvuma et al. 2006; Brett 2005; and Gavin 2007). The first two events diminished the last of Zimbabwe's reserves, while the last sacrificed one of the nation's last remaining sources of income, leaving only manipulation of the money supply as a means to fund government expenditures.

The veterans of Zimbabwe's war for majority rule are some of Robert Mugabe's most loyal supporters, considering him to be one of their own. In many ways, those often identified as "war veterans" are more of a proxy for followers of ZANU-PF, as Michelle Gavin (2007) points out that many of the "veterans" participating in the violent land reforms were far too young to have served in the 1970's. Regardless of the legitimacy of their membership, the group was the victim of corruption, with their promised pensions being robbed by government officials. In response, Mugabe agreed to a payment package that had a potential cost of Z\$4 billion over its lifetime. Upset by this deviation from its planned reform budget, the World Bank responded by withdrawing a US\$62.5 million balance of payments credit. After a proposed tax increase to balance these two unexpected damages to the government's resources was successfully protested by labor unions, currency creation was quickly put into action (Mumvuma et al., 2006, p. 258). Though not yet at levels satisfying Phillip Cagan's (1956) definition of hyperinflation, this period in 1997 marked the beginning of the inflationary climb.

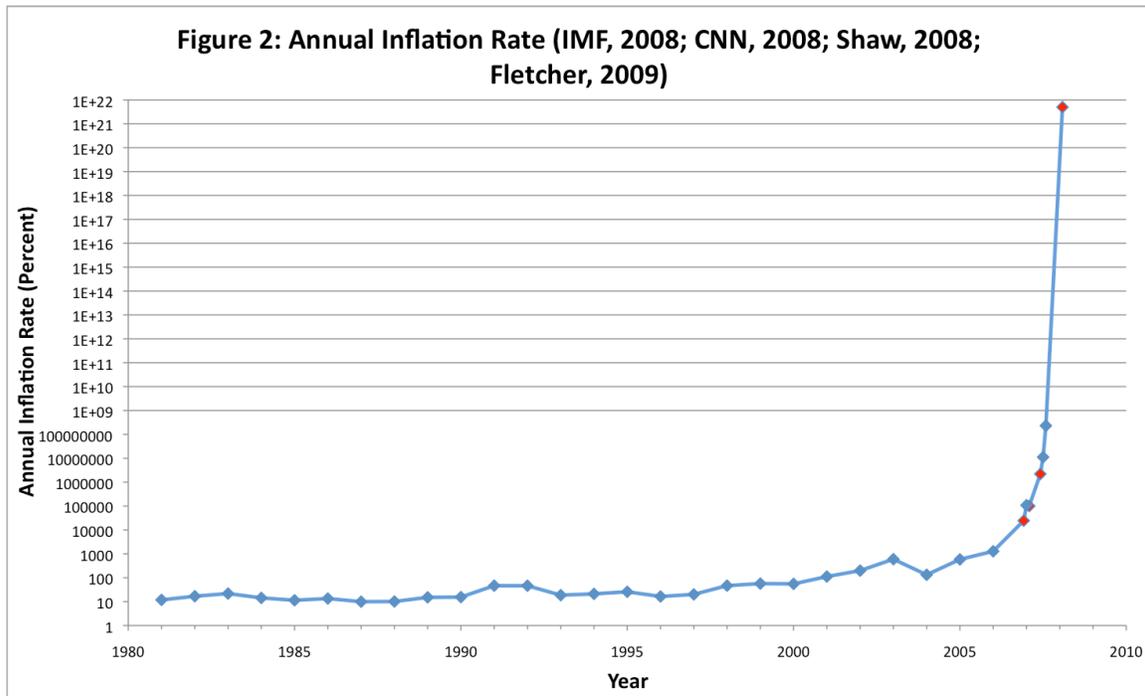
In September 1998, Zimbabwe chose to send armed forces to support the government of the Democratic Republic of the Congo (DRC) in the Second Congo War, an action whose motivations remain cloudy to this day. There is some speculation that the Zimbabwean government hoped to obtain connections or rights to diamond or gold mines in the DRC, or that it simply wanted to develop an alliance for future support (Pearce, 2000). Regardless of the intentions, there was very little possibility of actual economic benefit from joining the war, especially considering the estimated US\$33 million that it cost per month (Mumvuma et al., 2006, p. 261). The apparent recklessness of this action during a time of extreme economic distress powered a new wave of opposition to Mugabe's government, culminating in the 1999 creation of the Movement for Democratic Change (MDC), an opposition party responsible for the most serious challenges to ZANU-PF since independence. The MDC has been resilient in the face of oppression and violence by the incumbent government, building up to the apparent electoral victory of Morgan Tsvangirai in the 2008 presidential election, only to be forced out of a run-off by rampant pre-election violence. The popularity of the MDC and other opposition groups forced Mugabe to resort to increasingly corrupt uses of economic resources and political power.

The now-desperate ZANU-PF government instituted its fast-track land reform program in 2000, seen as the climax of the regime's economic mismanagement. The original land reform efforts in Zimbabwe had been based on a "willing-buyer, willing-seller" basis, in which the government used a set collection of funds (partly contributed by Great Britain) to purchase land from white farmers and redistributed it to families that had been living on poorer communal land. Looking to forge an emotional connection

with the people of Zimbabwe, ZANU-PF rejected its earlier “willing-buyer, willing-seller” policy and endorsed violent seizures of white-owned farmland. With little regard for the economic impact on the nation, members of the War Veterans Association took control of 2706 white-owned farms chosen by the government. By 2003, over 21 million acres had been seized, and the number of white commercial farmers had been reduced to 1323 from approximately 4300 in 2000 (Schleicher, 2004). These evictions have been devastating because land has been distributed not to black farmers, but to political allies of ZANU-PF. In an article in *Financial Times*, David Stevenson (2008) paints the picture quite clearly,

According to Tony Hawkins at the University of Zimbabwe, there has been a 51 per cent fall in agricultural output between 2000 and 2007, a 47 per cent fall in industrial output, and a 35 per cent fall in resources output. Over the same period, GDP per capita has fallen back by more than 40 per cent. At the same time, inflation has risen to near the 100,000 per cent mark. The UN World Food Programme estimates that 4.2m Zimbabweans – a third of the population – will face serious food shortages in early 2008.

Sadly, these figures are already out of date, with levels of inflation and food shortage exceeding those listed.



by the Reserve Bank of Zimbabwe, and subsequently the IMF. The red data points are estimations reported by independent media sources. Based on either data set, it is clear that Zimbabwe is on the verge of breaking, or has already broken, Hungary’s infamous record for the largest hyperinflation at approximately 4.2×10^{16} percent per month (Fischer et al., 2002). There is a chance that Zimbabwe will not break the Hungarian record, but it still seems appropriate to describe Zimbabwe’s financial situation as unprecedented. The Zimbabwean government and the international community have taken notice, reacting with varying effort.

Reactions to Hyperinflation

Earlier in this paper we reviewed the influence of the World Bank and the IMF on Zimbabwe’s market liberalization. Now that the damage of this transition has been done, the task of stabilization lies mostly in the hands of the Zimbabwean government. Any substantial aid from the West will only be provided once the government has ceased its manipulation of the money supply, and committed itself to fiscal balance. In other words,

aid will not be provided until Zimbabwe has been able to solve the problem on its own. Here, we will look at Zimbabwe's attempts to reign in inflation.

Perhaps it is easier to begin by identifying what the Zimbabwean government has not done to stop inflation. Through 2007 and 2008, there has not been reliable data signaling a decline in seigniorage (currency printing), nor has there even been a strong propaganda effort by the government to calm the fears of hyperinflation. The uncontrolled price increases have coincided with the disputed 2008 presidential election and its surrounding chaos. Mugabe's re-election fund likely benefited from the great inflation tax revenues, while the political crisis served to distract the public and media from money supply issues. The Zimbabwean government is beginning to yield some ground, announcing that on January 29th, 2009 "the U.S. dollar, South African Rand, British pound, and Botswana Pula would be considered legal currency alongside the Zimbabwean dollar" (Raath, 2009). It can be argued that this represents the end of the Zimbabwean hyperinflation, now that stable currencies are in use. Foreign currency is still a luxury in Zimbabwe however, with most poor citizens still relying on the rapidly inflation Zimbabwean dollar (Thornycroft and Berger, 2008). Until dollarization dominates the currency market, inflation of local currencies will continue to be an important issue. Under either interpretation, it is clear that Zimbabwe's flight from currency is well underway, giving hope for a less costly stabilization.

Zimbabwe's relationship with the IMF has not been helped by their economic policymaking during the hyperinflation period. The IMF typically reaches out to member nations once per year for its Article IV Consultations, which are meant to foster healthy economic policy. The last Article IV Consultation in Zimbabwe took place in 2006, just

prior to the advent of hyperinflation. At this meeting, the IMF recommended several policy actions: the creation of a strong monetary anchor, the removal of price controls, fiscal adjustments, comprehensive structural reforms, and improved relations with the international community (IMF, 2006). As we have seen, Zimbabwe followed little of this advice, leading the IMF to forgo the Consultations in 2007 and 2008. Zimbabwe must improve its relations with the IMF if it wishes to obtain debt relief or additional assistance, and things have recently been going in the right direction. On March 5th, 2009 the IMF announced that it would hold a Consultation with Zimbabwe within the month. This improved stance is due in part to the power-sharing agreement reached between election rivals Robert Mugabe and Morgan Tsvangirai. The agreement allows Mugabe to remain as president, while Tsvangirai takes on the new position of prime minister. Ideally, the two will split control of the different sectors of the government.

The international response to Zimbabwe's crisis has been relatively uneventful. The United States, Great Britain, and the United Nations have all condemned Zimbabwe's human rights violations, but have implemented only minor economic sanctions (Lyman, 2006). These may have inconvenienced some of the ruling class, but have not made any significant impact on Zimbabwean politics. Every criticism from the U.S. or England only fuels Robert Mugabe's speeches denouncing Western meddling and sabotage. South Africa, the nation identified by experts as most capable of influencing Mugabe, has made little to no governmental criticism of the ZANU-PF regime, even as independent media outlets detail the injustices (Lyman 2006, Gavin 2007). This is an example of where Mugabe's revolutionary past provides him political protection from neighboring governments. Only time will tell how far this aura will carry Mugabe. At

some point, regional leaders will be forced to intervene in this failing state, assuming it does not begin to fix itself.

The past few years have been particularly grim for Zimbabwe, with every burst of potential (Tsvangirai's election showing) countered by increased political suppression and economic chaos. Still, the new power-sharing government provides at least a glimmer of hope that Mugabe's government is committed to solving the nation's problems³. The instability of Zimbabwe's economy is matched only by the instability of its politics, making any predictions akin to guesswork. The only sure thing is that Zimbabwe will not stay in its current form, rather transforming for better or worse. In the next section past hyperinflations will be examined, and if nothing else, solace can be taken in the fact that they have all come to an end.

³ Though the February 13th treason charge pressed against Roy Bennett, one of Tsvangirai's key cabinet members, shows that old habits die hard for ZANU-PF (Freemen et al., 2009).

Historical Cases of Hyperinflation

Though Zimbabwe has grabbed recent headlines for its extraordinary monetary failures, there have been a number of other notable hyperinflationary cases in the past century. When Phillip Cagan (1956) wrote his defining work on hyperinflation, his data came from nations ravaged by the costs of the two World Wars. The destruction of war, especially when combined with reparations debt, certainly created a fertile breeding ground for hyperinflation. That being said, war is not a prerequisite for hyperinflation, as several nations in the past fifty years have destabilized without an internal or external military conflict. This section will cover these two halves of the 20th century with the aim of finding traits common to all hyperinflationary economies. These nations all lost their grip on monetary control, but through various methods were eventually able to regain command of their economies. The recovery strategies are of the utmost interest to us here, as we attempt to find a solution applicable to Zimbabwe. The empirical work of Cagan (1956) and the more narrative work of Thomas Sargent (1982) will provide the basis for the first half-century. The late 20th and early 21st centuries are covered by a larger collection of researchers and authors, due to the diversity of these hyperinflationary cases.

Early Cases

Snapshots of post-WWI (and recently separated) Austria and Hungary provide two prototypical examples of hyperinflation as a monetary phenomenon induced by fiscal deficits. As outlined by Sargent (1982), both nations emerged from the war with huge reparations debts, a chaotic governing structure, and a loss of territory. It should be noted that the loss of agricultural territory had a similar negative effect on Austria and Hungary

as the fast-track land reforms have had on agricultural productivity in Zimbabwe. All three nations were forced to rely more heavily on food imports, depleting their foreign reserves. Also, the food that was once provided by the private sector was increasingly replaced by government subsidies or welfare, further fueling the deficit. These growing costs were combined with the inability (or unwillingness) to increase tax revenues, as described by the Olivera-Tanzi effect. This led the Austrian and Hungarian governments to print currency to finance their expenditures. What followed in each case was a full dive into hyperinflation, complete with the “flight from currency” (decreased real cash balances) predicted by Cagan (1956).

Despite all these troubles, both Austria and Hungary were able to recover within a few years by thoroughly redesigning their monetary systems under the guidance of the international community, in this case embodied by the League of Nations. In both cases, by simply showing a legitimate interest in solving the crisis, the League restored enough confidence to pause inflation’s climb (Pasvolsky, p. 52 of Sargent, 1982). This effect, based purely on expectations, could have easily been wasted if it had not been followed by legitimate policy solutions. Each nation created a new independent central bank and a fully backed currency. Of course, reorganization matters little if a nation is still bankrupt, so perhaps most importantly, each nation was given improved terms on its reparations debt, along with international reconstruction loans. Within a few years of these policy changes, real economic variables in Austria and Hungary returned to pre-hyperinflationary levels (Sargent, 1982).

This historical lesson offers several interesting comparisons to Zimbabwe’s situation. Firstly, it is important to look at the motivations of the international

community. Most of the reparation debts held by Austria and Hungary were owed to their regional neighbors and trading partners. Upon seeing the collapse of the two economies, it must have become clear to these trading partners that Austria and Hungary's stability would be vital for both the short-term repayment of debts and also for long-term trading opportunities. After all, no one wants a collapsed state in his or her own backyard. This created an efficient market situation, in that the entity (the League of Nations) with the power and money to support the debtor nations was also a regional neighbor who stood to benefit most from stabilization. This stands in contrast to the situation in Zimbabwe, whose trading relationships with wealthy Western nations are relatively insignificant compared to their economic ties to neighboring African countries (especially when looking at the value of the trade/loans relative to national GDP). The result is that the Western nations who have the funding and power to implement a change are uneager to fully devote themselves to the reconstruction, while those neighboring African nations that would benefit most from the stabilization do not have the resources to implement such a program. Admittedly, this is a simplification that ignores the complications of a regional hero turned strong-armed dictator, but it helps explain why Austria and Hungary were able to receive so much assistance while others continue to languish.

Sargent (1982) goes on to examine the hyperinflations in Poland and Germany during the same time period, and the results prove to be remarkably similar to Austria and Hungary. There are slight differences in what form their debts took, but the solution was always the implementation of an independent bank, a fully backed currency, and balanced fiscal spending. One of Sargent's primary hypotheses was that this transition could be accomplished with minimal costs and in a relatively short amount of time. He

credited this to two forces, the first being the decreased inflationary inertia that is caused by the “flight from currency.” The second explanation is an early outline of rational expectations theory, which is supported by his empirical findings that inflation ceases when monetary reform is announced, rather than when it is implemented. Overall, these findings provide a generally cheerful outlook on the ease of hyperinflation stabilizations. Given their data, Cagan and Sargent would be fairly hopeful for the prospects of Zimbabwe, but we must now see whether more recent hyperinflations tell the same story.

Recent Cases

Much of the research of the last fifty years has broadened the criteria for hyperinflationary study, such as in Fischer et al.’s “Modern Hyper- and High Inflations” (2002). This paper’s scope is similar to many papers written during this era, grouping nations experiencing very high inflation in with the few true hyperinflations⁴. This is a telling sign of the change in nature of inflationary cases (or possibly the changing nature of research interests). Currently, the most heavily studied inflationary problems revolve around lasting high inflation rather than the shorter, more extreme hyperinflations of Cagan’s time (Reinhart and Savastano, 2003). The more inclusive standards of these modern papers are also likely due to the importance of large data sets when using regression techniques.

Though researchers generally agree that the hyperinflations mentioned in the previous section fit Cagan’s (1956) model of changes in money supply, there is a large camp of scholars who believe that manipulation of the foreign exchange rate is at least partially to blame for the more recent high inflation cases. Cagan (1956, p. 91) himself

⁴ See Braumann (2000), Calvo and Vegh (1999), and Montiel (1988) for similar studies.

acknowledged that the foreign exchange rate could play a causal role in low levels of inflation, but he strongly disagreed that it could be a driving factor in *hyperinflation*. The question itself hinges on what constitutes low inflation, high inflation, and hyperinflation. For consistency between sections (and with Zimbabwe's current standing), our focus will be on the collection of nations that did reach hyperinflation by Cagan's definition, and hence those where manipulation of the money supply played the key causal role.

Fortunately, Fischer et al. (2006, p. 45) have compiled a table of these truly hyperinflationary cases, though with two notable caveats. Hyperinflations lasting two or fewer months have been excluded, along with several cases occurring due to the removal of communist market controls in Eastern Europe. Any cases falling under these classifications would have little resemblance to the situation in Zimbabwe, so the removals should not hurt our comparison. With these exclusions, we are left with a total of fifteen episodes of hyperinflation, as seen in Table 1 in the Appendix. Of these, three were in Africa, four in Central and South America, and eight in former Soviet republics. In this analysis, we will focus in on a few of the hyperinflations that have the most in common with Zimbabwe's experience.

Looking at the data, it is apparent that none of these recent hyperinflations have reached the extreme levels seen in Zimbabwe or in the post-WWI cases. Zimbabwe seems to be an anachronistic example, with inflation growth more closely matching that of Germany or Hungary. This is true despite the more similar contexts of the recent hyperinflations compared to those from the early 20th century. The difference then must be in the government responses to vast fiscal deficits and climbing inflation. The

following paragraphs will contrast the different strategies used to fight fairly common inflationary catalysts.

Though none of the nations in this sample implemented damaging land-reform programs of the Zimbabwean type, multiple cases involved large reductions in output from the nation's primary industry. In Angola, the reduction in oil prices hurt exports, while ongoing war significantly damaged the agricultural sector (Aguilar, 2001). The neighboring Democratic Republic of the Congo⁵ (DRC) felt a financial squeeze on their mining industry, as world mineral prices fell during the early 1990's. The DRC also faced political unrest, and much like the case of the "war veterans" in Zimbabwe, was forced to make unbudgeted payments to pro-democracy protesters (Beaugrand, 1997, p. 2). In addition to these familiar deficit-swelling problems, Angola and all of the former Soviet nations from Fischer et al.'s list were undergoing some level of transition from a state-controlled economy to a free market system. Nearly all of these transitioning nations shared Zimbabwe's lack of sufficient financial infrastructure. Without a well-developed financial marketplace, small businesses and individuals struggle to obtain loans, stifling potential economic growth.

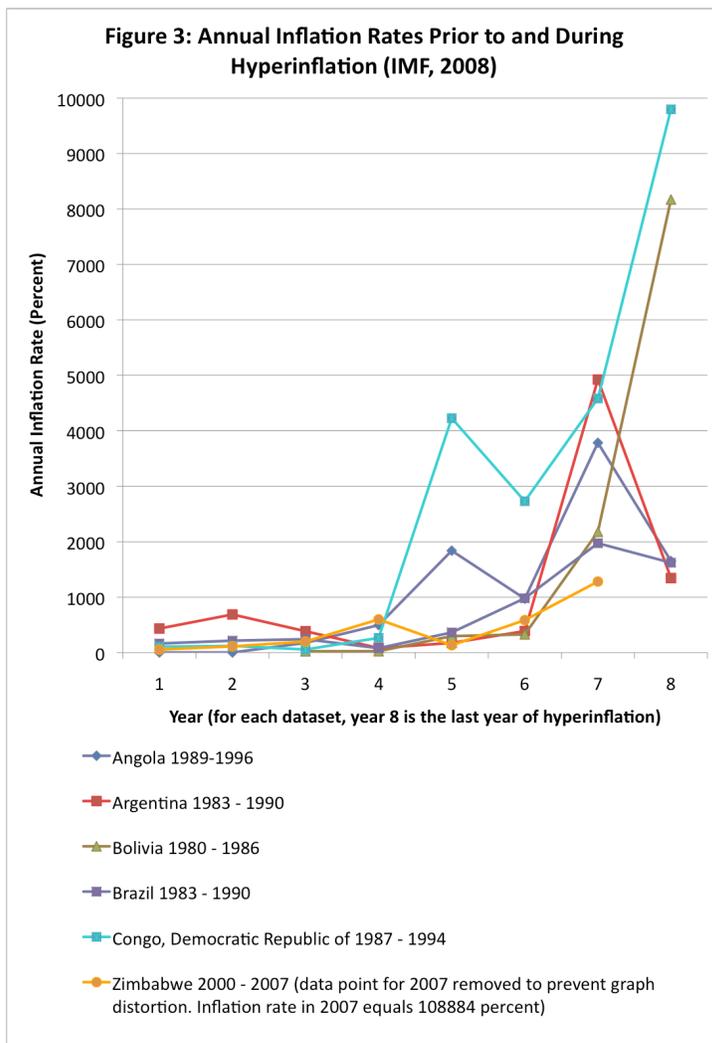
The question then, is what kept these nations' inflation rates below Zimbabwe's? In his paper assessing the DRC's economic conditions, Philippe Beaugrand (1997, p.14) offered the following explanation for the levels of inflation suffered by many countries:

Many historical precedents testify that hyperinflation is inherently highly unstable, and quickly leads to total collapse and forced stabilization. The famous Weimar episode in Germany lasted only 15 months, and the record Hungarian hyperinflation of 1945-46, less than a year. Developments in Zaire [DRC] since 1990, however, show that hyperinflation can be sustained and total collapse avoided for many years. A number of Latin

⁵ Known as Zaire until President Mobutu was ousted in 1997.

American countries have also experienced triple- or quadruple-digit inflation rates for several consecutive years (notably Brazil, 1987-94, and Nicaragua, 1985-90). A key aspect of these long-lasting cases of extraordinary inflation was the *high variability* of inflation, as a consequence of *large fluctuations* in real government spending (see Vegh [1992]).

Though the large fluctuations in government spending can be hard to reliably track in high inflation environments, the high variability of inflation is seen clearly in the data for many of the chronic high inflations. Figure 3 compares the inflation trends of all six of the market economies from Fischer et al.'s table. At least at an annual level, Zimbabwe's



case does not seem particularly unique. Like several of the other nations, Zimbabwe endured a previous bump in the inflation rate (at year four), but was able to delay a true hyperinflation until several years later. Argentina's 1985 Austral plan created an analogous short-term relief from inflation (Heymann, 1991). Despite arguments in previous paragraphs showing Zimbabwe's similarities with the early 1900's

hyperinflations, it seems that the relationship is not fully clear. Both qualitatively and quantitatively, Zimbabwe's lead-up to hyperinflation fits the mold of a modern hyperinflation, while its climax recalls the WWI-era cases. Any discussion of solutions will have to decide what defines the Zimbabwean hyperinflation: its real causes or its current magnitude?

The next section of this paper contains an overview of ongoing research aimed at finding the answer to the above question. This includes technical economic analysis as well as political summaries by international relations experts. All of these works draw their conclusions from previous hyperinflations (of varying definition). Though the argument can be made that every hyperinflation is unique and incomparable, utilizing the knowledge gained from previous experience is the only way we can hope to lift a nation out of monetary catastrophe.

Research on the Zimbabwean Hyperinflation

Zimbabwe has attracted a large amount of scholarly attention because of its failing economy and its potential for total collapse. It is also temporally isolated in its monetary problems, as opposed to the many synchronous hyperinflations during the periods following the end of WWI and the fall of the Soviet Union. As for the causes of the crisis, most research is in agreement with the general history presented earlier in this paper. While exchange rate distortion may have played an initial role in price growth, currency creation has clearly been the main culprit. Despite all of the collective analysis of the situation, no demonstrable solution has emerged. The problem is that the Zimbabwean crisis is largely endogenous, a product of disruptive and ill-advised policymaking. Unlike many of the post-WWI hyperinflations, there is no crushing reparations debt that can be repudiated. Most importantly, the Zimbabwean government has shown little sign of changing policies. Given Robert Mugabe's imperviousness to outside criticism, most observers conclude that a wait-and-see approach should be taken⁶. It is under this cloud of uncertainty that I will try to sum up the policies recommended by the research consensus, understanding that they can only ever take place if Mugabe is ousted or has a sudden change of heart.

The recovery needs that follow can be divided between those common to nearly every hyperinflation, and those unique to Zimbabwe. The strategies in the former category should be familiar given the discussion of previous hyperinflations. They are the fixes that address the base causes of price growth, while the suggestions in the latter category aim to repair Zimbabwe's damaged economic infrastructure.

⁶ See The Economist, 2007; Games, 2005; Gavin, 2007; Lyman, 2003; and Moss and Patrick, 2005 for similar opinions.

Most obviously, Zimbabwe must stop printing money. This is a fairly trivial issue, because the printing is simply a reaction to the much more pressing problem of fiscal imbalance. Researchers are unanimous in their call for a reduction of government debt, which has swollen due to patronage, inefficiency, and an inability to collect tax revenue (Munoz et al., 2007). The deficit figures released by Zimbabwe are highly inaccurate, as they fail to track many forms of payment to government-supported businesses. Munoz et al. (p. 9, 2007) found that when these high-cost “Quasi-Fiscal Activities” were included in budget calculations for 2006, the reported surplus of 2 percent of GDP became a deficit of 25 percent of GDP. As a first step, Munoz et al. call for improved accounting, with all relevant fiscal data recorded. From here, the government could begin privatizing and reorganizing their inefficient public and semi-public industries.

While a balanced fiscal position will hopefully prevent the need for an inflation tax, the implementation of a strong monetary anchor could ensure that Zimbabwe’s currency holds real value. The type of anchor that should be used, as discussed previously in the section on hyperinflation theory, is a matter of opinion. That said, Zimbabwe’s situation is so dire, and its lack of foreign reserves so complete, that an exchange rate stabilization is considered unfeasible. Without sufficient reserves of foreign currency, Zimbabwe would be unable to purchase its own currency as a way to defend the peg.

The remaining debate concerns how strict of a money-based anchor should be created. Sharmini Coorey et al. advocate a fairly standard money-based anchor, with interest rates “gradually moved to market determined levels” (p. 11, 2007). This IMF policy recommendation is fairly consistent with previous actions in other hyperinflations, and is less drastic than the advice of some independent observers. Steve Hanke of the

Cato Institute proposes three options for Zimbabwe: full dollarization, free banking, or a currency board (p. 5, 2008b). Though free banking (which refers to a system where private banks issue their own currencies) is too drastic and old-fashioned to be considered by the IMF or Zimbabwean government, the other two options are realistic possibilities. Dollarization is a term for the official adoption of a foreign currency, with all prices listed and business conducted in the foreign bills. Zimbabwe has already leaned in this direction by allowing foreign currency to be used alongside the Zimbabwean dollar. To finish the job, Zimbabwe would need to determine a fair exchange rate for the Zimbabwean dollar, and offer replacement foreign bills for all of the remaining national currency in the market. A currency board offers a similar solution, in which a national currency is kept, with 100 percent exchangeability for foreign currencies. Either option would require cooperation between the Zimbabwean government and the foreign currency supplier, but such deals do exist: The South African Rand is currently used as the currency peg for Lesotho, Namibia, and Swaziland (Hanke, 2008b, p. 11).

A handful of other reforms are widely considered necessary. The restoration and protection of private property rights is paramount. This is mostly a response to the fast-track land-reform program, with some concern for the nationalization of industry. The land ownership problem has two fronts, that of white commercial farmers whose land has been seized, and the untitled communal land that is home to the majority of Zimbabwean farmers. Michelle Gavin calls for audit and titling of all communal land, with each farmer entitled to a fair share of the property that they maintain. This would give the farmers more security when trying to invest in capital improvements, or alternatively, allow them to sell their land to pay for educational or entrepreneurial expenses. The ability to sell

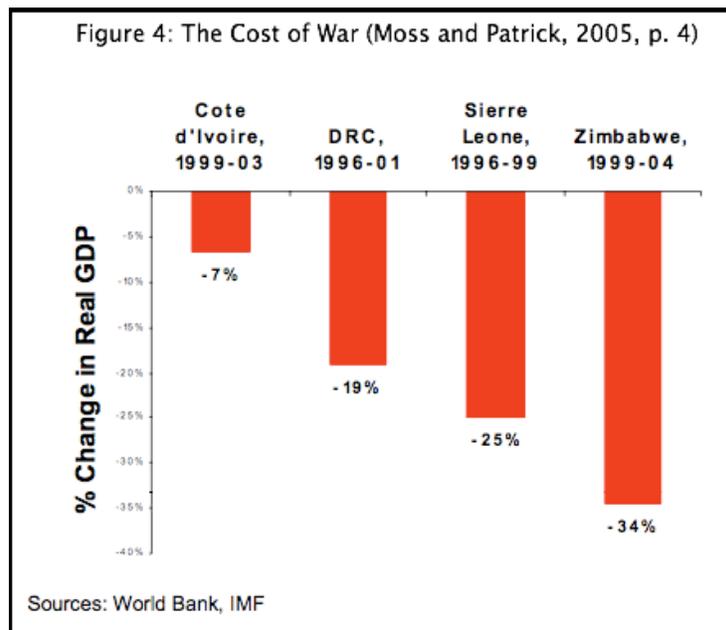
land to committed farmers would enable the consolidation of land, and more efficient economies of scale (p. 31, 2007).

Dealing with the displaced commercial farmers is a more delicate issue, since new farmers have already resettled on their land. Most researchers argue that reinstalling the white landowners would be impossible, given the previous chaos brought on by colonial land distribution. Instead, these displaced farmers should be compensated monetarily with help from international donors (Games, 2005; Gavin, 2007; Moss and Patrick, 2005). One counter-argument proposes that any “fair compensation” of the dominant white commercial farmers will not change the problems of wealth inequality. The compensated farmers could simply buy back equivalently large tracks of land on the private market, regaining control of the agricultural sector (Mumvuma et al., 2006).

Regardless of the exact implementation, the establishment of private property rights (and law-and-order in general) is critical to reverse Zimbabwe’s “brain drain.” The drain refers to the emigration of talented Zimbabweans, seeking foreign refuge from political and economic dangers. About three million Zimbabweans are estimated to have fled the country, approximately twenty percent of the population (The Economist, 2007). Many of those who fled early were successful middle and upper class citizens who could afford to escape to a variety of African, European, and North American nations. More recently, this stream has turned into a wave of refugees surging into neighboring South Africa, desperate for food aid and cholera treatment. These individuals must choose to return on their own, but the U.S. and other nations should ensure that their visa and immigration laws do not impede these vitally important expatriates (Gavin, 2007; Moss and Patrick, 2005).

There is some disagreement on the potential speed of a recovery, with Munoz et al. (2007) believing in the quick type outlined by Sargent, while Moss and Patrick (2005) anticipate a much longer road back to stability. This represents the different perspectives of these authors, the former viewing Zimbabwe from an economic standpoint and the latter focused on the humanitarian crisis that has resulted from the hyperinflation. It is true that Zimbabwe's monetary system could be restored to a functioning level in a matter of months if the government was completely willing, but the restoration of lost confidence, output, and market organization may take many years.

From Moss and Patrick's (2005) standpoint, the level of economic damage sustained in Zimbabwe is more similar to that of a post-conflict nation than to that of a



typical hyperinflationary state.

As seen in Figure 4, Zimbabwe's decline in GDP from 1999 to 2004 is greater than that endured in several African nations during their recent civil wars.

Consequently, Moss and Patrick suggest that

international donors adopt a

Zimbabwean policy of the type currently being used in war-torn Afghanistan. For example, financial aid would be provided wherever it is needed, rather than as a reward for reaching reform benchmarks (which is standard IMF protocol). This would prevent

the situation noted by E.A. Brett (2005), in which the world's truly needy are often denied aid because of their government's non-compliance with the advice of the World Bank, IMF, etc. This is a moral hazard situation, in which helping the poor rewards failing leaders and postpones a transition of power. Yet the counter-option of denying aid is equally unpleasant. Moss and Patrick wrote about a post-Mugabe framework, and they avoided making a firm statement on how aid should be distributed while he remains in power. Instead, they endorse the creation of a trust fund in preparation for an eventual regime change. Donors could begin contributing immediately, allowing fund managers to allocate spending in advance.

This preparation for an eventual recovery would also send a strong political message that the international community is prepared to help once a cooperative government is installed. The United States and other donors could also publicly reproach those nations that assist the Mugabe regime (Gavin, 2007). Unfortunately, there is a large gray area in terms of how complicit each state is with ZANU-PF's repressive policies. These are among the only suggestions for influencing (rather than reacting to) changes in Zimbabwe, which seems to be an unsolvable puzzle for most foreign policy experts.

For the most part, the advice presented by researchers is the type that could be used in the most optimistic scenarios. They cannot be faulted too much for this, as writing about all the things that cannot be done is hardly productive. Still, most of the writing outlines the step-by-step procedure that a rational, economically trained, and apolitically motivated leader would try. Nothing prevents this from happening under a new leadership regime, but it makes a large assumption about the next Zimbabwean president (or prime minister, depending on whether the new power-sharing system

succeeds).

The emphasis on a complete overhaul of the Zimbabwean economy reflects the researchers' knowledge of previous cases of hyperinflation. As seen in section three, nations like the DRC and Argentina have made half-hearted attempts at controlling prices, usually yielding a momentary calm. In the long run, these uncommitted policies only delay an eventual recovery. As Sargent (1982) described, the announcement of a credible policy shift can be instantly effective in curbing inflation, giving the government a window of several months to back up its words. If the plan fails to balance the budget and stop money creation, hyperinflation will reignite. A failed stabilization by the new Zimbabwean leadership brings the danger of inciting a violent conflict, which is why researchers are more concerned about the success of the recovery than how quickly it is implemented.

By examining previous research, it is possible to determine which policy options are undoubtedly necessary and which ones are still ripe for debate. The policy conclusions presented in the next section will not try to counter the opinions that are of strong consensus. Instead, the discussion will focus on the more ambiguous issues, hopefully ironing out the finer details of a total recovery plan.

Policy Conclusions

In the past century, no other country has matched Zimbabwe's combined levels of economic collapse and leadership withdrawal. One could argue that given the success with which Robert Mugabe fended off the electoral challenge of Morgan Tsvangirai, there is no reason to assume that he could not continue to hold power for years to come. Mugabe is well into his old age, but he has shown little evidence of health problems, and even less evidence of relinquishing power. He has stated his position quite clearly, saying "Zimbabwe is mine ... I will never, never sell my country. I will never, never, never, never surrender" (Raath, 2008). Having thwarted both political and social challenges to his power, there is a legitimate concern that a violent uprising or coup could eventually force Mugabe from power. Given the strength and loyalty of the military, this scenario could only occur when ZANU-PF is no longer able to sustain the wages and demands of its soldiers. So far, funding has been maintained through the nationalization of various industries and the neglect of public services. These taps will eventually run dry, though perhaps not for several years. Before this countdown hits zero, the United States and other international donors must make moves to ensure that the eventual succession to the Zimbabwean presidency is not decided through a military conflict.

Avoidance of a total government meltdown is a difficult goal when the other main objective is to convince a xenophobic leader to step down. The creation of a trust fund, as mentioned by many other authors on this subject, is a good way to project support for future leaders, but it further alienates Mugabe and his current regime. The only leaders who may be able to reach out to Mugabe are those from neighboring African nations. The anticipated election of Jacob Zuma to the South African presidency may be a turning

point in relations between these two pivotal trading partners. Zuma's criticisms of Mugabe have been much harsher than the relative silence of Thabo Mbeki, the current South African president (The Washington Post, 2008). While the United States might be able to further influence African leaders to speak out against Mugabe, if it is not done subtly, it risks proving true Mugabe's claims of neo-colonial meddling. This leaves South Africa, because of its economic power and African leadership, as the best possible conduit for putting external pressure on the Zimbabwean government.

Whether through concessions by ZANU-PF or their eventual replacement by a new regime, the first and most basic goal in Zimbabwe should be the balance of fiscal spending, hopefully leading to a new monetary system. If any reform is possible under Mugabe's rule (or that of an equally oppressive successor), it is in this sector. The legalization of foreign currencies on January 29th, 2009 was a signal that the government has some understanding and acceptance of the economic situation. Dollarization, which had already been well underway, is now almost totally complete. Even on the front page of The Herald, the Zimbabwean newspaper seen widely as the prime source of pro-ZANU-PF propaganda, advertisers promote construction supplies with prices listed in U.S. dollars (The Herald, 2009). In addition, soldiers in the Zimbabwean army are paid \$100 per month, a figure they are hoping to increase (The Zimbabwe Times, 2009). At this point, the adoption of a new, stable Zimbabwean currency may in fact be slower and more costly than an official dollarization of the economy. Though there is likely some emotional interest in having a unique national currency, the Zimbabwean community has accepted foreign currencies, and replacement would incur additional menu costs.

The adoption of the U.S. dollar or the South African Rand would certainly bring up some long-term concerns. First, the ability of the government to conduct monetary policy would be nullified until it accumulates a sufficient reserve of foreign (now national) currency. Government manipulation of the money supply is probably the last thing that the average Zimbabwean wants now, so this issue could be successfully avoided. Secondly, there is the issue of currency values being out of one's control, with open market monetary policy in the U.S. (or South Africa) potentially disrupting the costs of imports and exports for Zimbabwe. This is an issue that could influence which foreign nation Zimbabwe chooses to deal with. South Africa, for its part, has revenue sharing agreements with the nations that use their currency. Both Lesotho and Namibia receive a portion of the revenue from the creation of additional rand (the inflation tax) by the South African government (Hanke, 2008b). Ecuador and El Salvador, two of the largest nations to fully adopt the U.S. dollar, have not received similar agreements from the U.S. government.

The possibility of a revenue sharing agreement, along with the efficiency benefits of sharing a currency with your primary trading partner, make Zimbabwe's adoption of the South African rand the most logical choice for a quick economic recovery. There is still one large hurdle in the process of "randization." Though the private markets have successfully converted their exchange into foreign currency (mostly through remittances by expatriates), the government would still need to convert its reserves of Zimbabwean dollars into rand. Zimbabwe clearly does not hold enough foreign reserves to accomplish this without aid, or it would not have fell into hyperinflation in the first place. International donors certainly have the necessary amount of aid to accomplish this task,

but this aid would be placed directly into the hands of the government responsible for the largest economic debacle of the last fifty years. If Robert Mugabe is still president at this time, it would take many concessions and pre-conditions for such a deal to be accomplished, an unlikely prospect indeed. In other words, this agreement will require a more cooperative Zimbabwean president, or a political surrender by one side or the other.

If Zimbabwe does end up with a new president committed to fixing the economy, many of the suggestions detailed in the previous section suddenly become possible. Fiscal balance becomes a much more feasible goal, given an influx of support from external donors. The IMF could resume its stated goal and provide counsel and funding to the Zimbabwean government in an effort to streamline inefficient government industries and services. The randization of the economy would still be the fastest path to stabilization, and reaching an agreement with South Africa would be much easier for a non-Mugabe president. Once this initial stabilization is achieved, Zimbabwe could begin to implement the reforms in property law and land distribution as they were outlined by Games, Gavin, Moss and Patrick, etc. Finally, it is hoped that with the implementation of sound new laws, the Zimbabwean diaspora would begin returning home, providing a needed boost of skilled labor.

This is the rosier image of Zimbabwe's future, and one that will require many breaks in its favor. Mugabe's isolation has tied the hands of the international community, leaving little opportunity to influence the current crisis. The primary action that the West can take is to create a trust fund as described by Moss and Patrick (2005), and hope that Jacob Zuma can make an impact upon taking office South Africa. Beyond this, the West

must wait to see how the next few months (or years) play out, and be ready when an opportunity presents itself.

Given the more devastating downturn of the real economy, it is unlikely that Zimbabwe can make as quick of a recovery as its hyperinflationary ancestors of the early 20th century. On the other hand, it seems quite possible for Zimbabwe to *begin* its recovery as quickly as those nations. Zimbabwe has certainly dug itself a deep hole, but with proper leadership, it could once again become an economic power of the African continent.

Appendix

Table 1 (Fischer et al., 2006, p. 45)

Table 2. Hyperinflations, 1956-1996 (Cagan Definition) 1/2/

Countries	Dates of Episode	During Hyperinflation					Twelve-months After Hyperinflation		
		Duration (in months)	Cumulative Inflation	Monthly Inflation Rate			Geometric Average	Median	Highest
				Geometric Average	Median	Highest			
Angola 3/ Argentina Bolivia Brazil Nicaragua Congo, Dem. Rep. of Congo, Dem. Rep. of	Dec-94 May-89 Apr-84 Dec-89 Jun-86 Oct-91 Nov-93	19 11 18 4 58 12 11	62,445.9 15,167.0 97,282.4 692.7 11,895,866,143 7,689.2 69,502.4	40.3 58.0 46.6 67.8 37.8 43.8 81.3	36.0 61.6 51.8 70.2 31.4 35.2 65.0	84.1 196.6 182.8 80.8 261.2 114.2 250.0	9.5 12.0 5.7 14.8 1.8 15.9 12.9	5.3 11.2 2.7 14.4 0.8 12.6 12.8	38.1 27.0 33.0 21.5 20.3 40.9 26.2
Armenia Azerbaijan Georgia Tajikistan Tajikistan Turkmenistan Ukraine Serbia	Oct-93 Dec-92 Sep-93 Apr-93 Aug-95 Nov-95 Apr-91 Feb-93	15 25 13 9 5 3 44 12	34,158.2 41,742.1 76,218.7 3,635.7 839.2 291.4 1,864,714.5 156,312,790.0	47.6 27.3 66.6 49.5 56.5 57.6 25.0 228.2	44.5 23.1 66.3 36.4 63.0 55.7 14.9 54.2	437.8 64.4 211.2 176.9 78.1 62.5 285.3 175,092.8	2.4 5.2 0.4 0.1 2.9 11.2 10.9 1.0	2.0 3.3 0.9 3.3 2.1 9.7 7.7 -0.2	7.8 27.8 13.0 6.6 19.6 25.0 28.4 12.4

Sources: IMF, International Financial Statistics; national authorities, and IMF staff estimates.

1/ Cagan defines hyperinflation "as beginning in the month the rise in prices exceeds 50 percent and as ending in the month before the monthly rise in prices drops below that amount and stays below for at least a year. The definition does not rule out a rise in prices at a rate below 50 percent per month for the intervening months, and many of these months have rates below that figure."

2/ Excludes the following one and two month episodes. In the market economies, Chile (October 1973) and Peru (September 1988, July-August 1990). In the transition economies, Estonia (January-February 1992), Latvia (January 1992), Lithuania (January 1992), Krygyz Republic (January 1992), and Moldova (January-February 1992). In addition, we also excluded Belarus (April 1991, January-February 1992), Kazakhstan (April 1991, January 1992), Russia (April 1991, January 1992), and Uzbekistan (April 1991, January-February 1992) even though by Cagan's definition these episodes lasted more than 2 months, as they appear related to two price jumps (April 1991, and January-February 1992).

3/ Period after hyperinflation is from July to December 1996.

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- Bachelor of Science in Computer Science and Economics at The Pennsylvania State University, Spring 2010
 - Minor in Mathematics
 - Honors in Economics
 - Thesis Title: Analysis of the Zimbabwean Hyperinflation Crisis: A Search for Policy Solutions
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EXPERIENCE

- Summer Consultant, Bates White LLC *Summer 2009*
 - Modeled economic impacts in asbestos liability cases
 - Worked in concert with Ph.D. economists on expert reports
 - Updated and expanded liability modeling software
- Student Researcher at Penn State Applied Research Lab *Fall 2008*
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HONORS/AWARDS

- Student Marshal, Computer Science Department, College of Engineering
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