Assessing the effect of inflation on UK crime.

Csct Masters Project

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# Introduction

*“The history of prices is the history of change”* (Fischer, 1996)*.* Over the last 60 years, there has been a sharp uptake in the use of quantitative methods for the study of living standards. With the growing accessibility of data, scholars have been able to transform what was before a conundrum challenging power of qualitative philosophical deduction to one of empirical questioning.

Fleisher’s 1963 paper on “The effect of unemployment on juvenile delinquency” was among the first to stress the importance of understanding macroeconomic predictors of crime. The paper presents an empirical approach to estimating the opportunity cost of policy decisions using statistical methods. In 1974 Becker took this methodology of inferential modelling further with his “economic approach” to crime and punishment which formulised a model for criminal choice, claiming some persons become criminals if the expected utility derived from the offense exceeds the potential they would expect to achieve from engaging in a legitimate alternative (Becker, 1974).

Since then, inferential studies identifying determinants of criminal behaviour and crime rates has supported, although often known to be ignored by, policy makers. Recent research on crime has been dominated by studies on unemployment and its effect on crime rates with some consideration being shown to other measures: economic output, wages, and consumer sentiment.

Research concerning inflation as a predictor for crime is uncommon and generally focused on the United States. Through application of Becker’s theory that models crime as a function of the opportunity cost of illegal activities against the risk of conviction and the cost of punishment it can be deduced that the relative price level increase may provide a strong predictor for crime rate. By applying basic knowledge of market economics, we can attribute a fair amount of reason to the assumption that demand for cheaper stolen goods increases with increasing price level and in turn causes a growth of property and violent crimes as transactions along the criminal supply chains increase. We’d also assume that this demand-supply interaction is compounded by the injurious consequences of financial hardship on mental health, creating an even more volatile platform upon which the rationalisation of the unfavourable criminal choice becomes more reasonable (Martin-Carrasco *et al.*, 2016).

With the ongoing cost of living crisis arising due to a scarcity of energy and other essential commodities in the wake of the covid pandemic and the global response to Vladimir Putin’s invasion of Ukraine, research in this area will provide context which may be used to add further value to any future policy decision/

# Background

## Measuring Inflation

In macroeconomics inflation is defined by the general increase in the price of goods and services in an economy. It is often employed as a broad measure through which we could visualize the relative change in the cost of living in an economy, but can also be applied within a narrower scope that focuses on specific goods or services. The price of a haircut from my local barber over a period of my childhood, 2005 to 2011, had increased from £5 to £10. I was surprised to find out upon a recent visit home that the price of my usual barbering service had increased to £15. If we apply the formal definition for inflation:

where is the original price of the good/ service and is its price after some time-period, , we can state that the price of my haircut had inflated at a rate of 100% through the 5-year period beginning 2005 and a further 50% since then.

Calculating inflation for a single product or service is simple arithmetic exercise but only provides very little perspective when assessing the state of prices in an economy. Calculating the “general” inflation rate of all the prices of goods and services in an economy is more complicated.

At the UKs office of national statistics consumer price inflation is estimated by the percentage change in the price of an average basket of goods and services in each period, often yearly or monthly. The CPIH (consumer price index including owner occupiers’ housing costs) is regarded the most comprehensive measure of that price and is the ONS’s favored price indicator over the CPI (that ignores housing costs) and the retail price index or RPI (which accounts for mortgages and is therefore highly correlated to interest rates) (*Consumer price inflation, UK - Office for National Statistics*., n.d.).

This basket of goods used to compute the CPIH, sometimes called a market basket, is a representative sample of over 700 goods and services, collected by surveying household expenditure. Items are weighted depending on their relative importance such that a price in the change of petrol would produce a greater contribution to the index than an equivalent change in the price of English tea bags. The items and weights are evaluated and updated yearly such that they remain representative of household expenditure with changes in lifestyle over time. The growing popularity of vegetarian and vegan diets has seen the introduction of canned beans, lentils and chickpeas to basket this year, along with meat free sausages. While this year’s removals included men’s suits, reflecting the impact of the global pandemic on working life.

Owner occupiers’ housing cost, often abbreviated to OHH in ONS publications, are the costs of housing services associated with owning, maintaining, and living in one’s own home. Rental equivalence is applied and favored over the inclusion of mortgage payments, that change with interest rates, and is given by the amount of rent a homeowner would pay for an equivalent property.

The index describes the change in the price of this market basket from a base year and is given by the formula:

where is the cost of the market basket in the current period and is its cost in the base period.

This measure for price index was introduced in 2005. Prior to this, the RPI, retail price index, was used as the ONS’s main indicator for inflation calculations. CPIH timeseries figures going back to 1988 were modelled on the existing CPI timeseries after it’s release in 2005 and later, a more extensive back dating of the series, modelled on RPI figures was produced.

## National Context

The current cost of living crisis has seen widespread media coverage in the last months. The compounding effects of the costly pandemic and supply chain disruptions due to the ongoing Russian war in Ukraine are most often referenced as the most significant contributors of inflationary pressure. The annual rate of inflation of CPIH in June 2022 hit a 40-year high 9.4% up from May at 9.1% with the ONS saying that the main driver for the increase being the rising price of fuel.

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Figure - CPIH Annual Rate (Consumer price inflation, UK - Office for National Statistics., n.d.)

Since 1992, monetary policy has been based on the maintenance of an explicit numerical target, now 2%. For much of this period prices had been fairly stable. During the inaugural LSE Bank of England lecture, then Governor of the Bank of England, Robin Leigh Pemberton presented “The case for price stability” in which he cited many of the costs of inflation and argued that policies that prioritized price stability would be supportive of economic efficiency.

Alan Blinder, former vice chairman of the federal reserve, cleverly defined price stability as a when ordinary people stopped talking about and worrying about inflation. By this definition, considering the very low chance that anyone reading this report would have not had, at the very least, small talk about inflation at some point the last two months, there is strong evidence that prices are currently unstable.

The previous 25-year period saw a general price increase of over 750% due to the collapse of Bretton Woods and other related and compounding effects (King, 2002). The reintroduction of price instability or apparent inflation proneness in the UK necessitates an assessment of policy priority with studies such as this that act to challenge political assumptions.

It is important to note that rising fuel prices are the main contributor to this recent period of inflation. This is due to be particularly injurious to small businesses as business rates in the UK are uncapped. The British Chamber of Commerce reported the average small business in London with 30MWh annual electricity usage would have seen their bill increase more than five-fold (Barnes, Pickard and Romei, 2022).

## Measuring Crime

The difficulty in collecting data on crime is that a crime committed to “plan” would, in most cases, see the occurrence unreported. The ONS’s preferred method of data collection is by TCSEW (Telephone-operated Crime Survey for England and Wales), which recently replaced the in person CSEW due to the unfavorable global event. Results from the Crime survey are unaffected by changes in levels of reporting to police or police recording practices and it is therefore preferred over police recorded offenses, which are not designated national statistics.

The Home Office provides counting rules which are the national standard for crime classification, with documentation outlining those specifics appear on their website (‘Counting rules for recorded crime’, 2022). The main issue with use of police recorded crime in timeseries is that the crimes are counted on the year they come to light rather than the year they occurred. This obviously creates a significant problem when calculating the lagged response of crime against a change of an explanatory variable.

Unreported crimes are also source of significant error. These will act to create inconsistencies in the timeseries and reduce any model’s ability to capture the true relationship between variables. Research for the modelling of these values is available (‘Measuring the dark figure of crime’, n.d.). These models will not be induced for this study, however a modified version of this study that employs this technology may provide more conclusive results.

## Measuring Causation

Granger causality testing is often used in econometrics, psychology, and criminology to determine the ability of a time series to forecast a target variable. The test should be employed as an assessment of predictive causality, or temporal relation, as opposed to a question of “true causality”, which is considered a more philosophical topic.

If we let y and x be stationary time series. To test the null hypothesis that x does not Granger-cause y one must prove, according to their t-statistic, that individual lagged values of x add explanatory power to the regression of y such that:

Failure to reject the null hypothesis that x does not Granger-cause y occurs where there is insufficient evidence that any lagged values of x are retained. This evidence can be obtained by F or chi square testing.

# Literature Review

Ridker acknowledges the failure of economists, many of which he identifies as being not particularly confident enough to make comment within the domain of human psychology, of ignoring the effect of economic growth on human behaviour. The article (Ridker, 1962) was an attempt to correct what he described as a shortcoming of the discussion on economic growth. His method of describing the process of economic growth, of which inflation is a significant component, in terms of a quantity called *“discontent or unrest”* would then allow more sensible prediction of growth patterns when some initial condition could be defined which would then in turn add value to the design of economic policies.

His conclusion affirms a positive result to our questions, “Does inflation influence crime”, when he writes that economic growth, a scaler of inflation, could be kickstarted by engineering discontent and channeling expressive activities to those that would be productive towards growth. If true, then surely a positive relationship between inflation and crime could be observed where a lack of those productive expressions existed.

Strümpel (Strümpel, 1974) submitted an article that opposed this logic. He cites the economic decline within the middle classes of Germany as a breeding ground for Nazism. His paper argues against, at this time, the many traditional models that analyzed the output of a social system in terms of economic activity, prices, inflation, an employment, that would contribute to a citizens sense of well being and therefore influence consumer behaviour. He outlines his own model that takes economic variables that measure the level of economic well being as inputs and describes their influence on a target variable, discontent.

The question of causation is largely dependent on perspective. Aforementioned are two approaches to modelling the response to economic policy. They differ in their logic with the fore introducing societal well-being as a predictor and cause of growth and the later considering discontent as a function of economic output. Regardless, it is important to note the long-standing interest among the academic community on seemingly important intersection between psychology and economics.

## Crime during Historical Price revolutions

Price records are amongst the most abundant source of quantifiable data for study of historical change. Fischer (1996) traces a link with inflation and crime back to the crisis of the 14th century. The destabilizing of the Western Europe economic zone, which was actuated by the collapse of large Tuscan banks under the strain of borrowing from British Monarchs, through the first years of the 14th century was a dark foreshadowing for the coming decades. The existing disorder was exacerbated with the failure of subsequent harvests, during years 1314 and 1315, that instigated a continent-wide famine. The price of essential commodities such as wheat grew 8 times. In the wake of material scarcity, crime began to rise across the continent. Fischer (1996) presents a strong causal link between the price of wheat and criminal indictments in Norfolk. The increased criminal activity extended beyond just acquisitive crimes with an increase in the number of homicides, assaults, and acts of rapes. The occurrences show consistency with the traditional theory of social strain (Merton, 1938) in that the resulting social pressures associated with inequality and rising prices drives individuals towards crime.

Again, during the 17th century, with the onset of what eventually became none as *“the little ice-age”* scarcity induced supply-side inflationary pressures caused another distinct increase in prices across the continent. Fischer (1996) provides evidence for another strong causal link between prices and the number of indictments for property crimes between the years 1566 to 1602 in Essex, citing the growing material inequality through these periods of hardship as a driving factor for social unrest.

A similar relationship was also observed during the revolutionary crisis of the 18th century. Again, uncertain weather causing supply-side instability and inflation alongside, falling real wages and growing unemployment. Lower classes looked towards feudal lords for blame. Rising inequality inspired increases of acquisitive crime whose temporal dependent structure was similar to cycles of price inflation through the period.

The works of Fischer (1996) is an invaluable aggregation of several price indices, all of which show close links with crime. A common factor through those periods is the widening of the inequality gap. Too often, when scarcity is introduced, those who own the means of production and property respond by increasing prices in desperate attempts to maintain profits through difficult times despite the suffering it causes to the lower classes. The increasing prices contribute to an increase in the opportunity cost of criminal activities. This becomes particularly dangerous when there is significant inequality between social classes.

## Crime and Inflation

By applying rudimentary understanding of market economics, formulating logical arguments linking higher crime rates with conditions associated with economic hardship is relatively straight forward. Research regarding the effect of economic markers on the crime rate goes back to the 1960s. Most recent research suggests, in line with logical expectations, that periods of higher crime rates coincide with times of economic struggle.

The 1999 work by David Hackett Fischer identifies four occasions of significant increase in the price level in Western History. Both violent crime and property crime increased during these periods and fell when the price level stabilized (Fischer, 1996), explaining that widespread deprivation, discontent, and stress brought on by inflation created a more potent environment for the inspiration of criminal behaviors. Literature suggests that relatively low inflation rates explain the absence of crime increases through the most recent recession (Rosenfeld, 2014).

Fischer’s research, despite receiving positive reviews, has not yet made any significant influence on criminological research. Other studies also confirm our logical conclusion that eroding economic conditions are linked with increased criminal incidences.

Arvanites claims that:

*“the possibility that economic conditions influence the rate of street crime was central the modern criminology theory.”*

Their research (Arvanites and Defina, 2006) describes the inverse relationship between economic growth and street crime, introducing inflation-adjusted, per capita growth as a measure for the “state of the economy”, a departure from previous methodologies that had focused on the use of unemployment as a predictor. The conclusion presents a strong argument for the price level dependent economic measures being a stronger predictor for crime than unemployment. They also explain that a worsening economy will struggle to support effective social infrastructure and law enforcement, thus creating inequality and further motivation for criminal activities.

The 1999 paper on “Consumer Misbehavior” which models the behavior of consumers who decide to purchase illicit goods, identifies price as a significant predictor for willingness to buy. (Albers‐Miller, 1999). The resulting increase in demand for cheaper goods following rises in aggregate price should strengthen incentives to obtain such merchandise by illegitimate means. Therefore, causing an increase in acquisitive crimes and associated violent crime that are necessitated by completely unregulated markets. In this realization the report concludes with a rather interesting recommendation, that policy makers should lobby for stricter enforcement of criminal sanctions against consumers to reduce demand side pressure that is apparently a significant driver for profit in those markets.

## The Unemployment Obsession

Since Fleisher’s seminal work in 1963 uncovering the relationship between juvenile delinquency and labour market conditions, much of the research on crime has focused on unemployment. For some reasons, the most significant being recent relative price stability, inflation has largely been overlooked as a measure that could incentivize the criminal choice.

The 1987 review of literature (Chiricos, 1987) discussed the existence of a time dependent component of the unemployment-crime (U-C) relationship. Having aggregated the results of 63 studies, Chiricos was able to uncover a distinct change in the proposed correlation between the variable after 1970. His discussion does not go as far as to undermine the consensus but highlighting how little was known about the link between these specific variables. Arvanites and Defina (2006) explains that while unemployment may provide a metric upon which to evaluate the performance of specific social and economic policies. It’s value does not capture the various causes of social strain (Arvanites and Defina, 2006) which could be caused, for example, by changes in work hours or pay.

The inconsistencies discovered in U-C during studies following 1970 supported the growth in a consensus of doubt in the metric for predicting crime. Cantor and Land (1985) proposed that the persistence of this finding, of a weak and often negative U-C relationship, suggests that this fact, in its temporal-ness, should provide considerable context in its exploration. Unemployment as an explanatory variable may perhaps find better place, if any within studies focused on quantitative analysis, within multivariate models.

Cantor and Land (1985) theorized a more complex U-C relationship in that unemployment could elicit a positive or negative impact on crime rates, by simultaneously increasing the motivation and decreasing the opportunity for criminal activity.

The motivation effect theory not only supports the logical theory that economic hardship creates a platform for crime but is also mirrored by neo-classical models of criminal choice (Becker, 1974), neo-Marxist models of economic constraint (Gordon, 1973) and even has roots in theories of strain (Merton, 1938).

The opportunity effect theory suggests that a rise of unemployment would mean fewer economic goods, or those prone and unfortunate enough to be targeted by criminals. By removing individuals from employment outside the home an increase in the rate of unemployment may see homes and persons with a reduced risk to victimization, with a higher concentration of the population remaining in residential properties or local neighborhoods. In addition, as an indicator whose fluctuations coincide with business cycles, higher unemployment generally indicates a fall in consumption, the lower rate of circulation of people and property that may accompany a rising unemployment rate could reinforce this opportunity effect and reduce crime in the short term.

Cantor and Land’s results indicated a small, but significant, total effect of the unemployment rate on acquisitive crimes (burglary, larceny-theft, and robbery). The apparent absence of influence upon violent crimes was not particularly surprising considering the highly individualistic factors associated with those actions. Their results also produce little evidence of theorized “lagged” motivation effect but did not lead to a conclusion that eliminated the possibility of the effect existing. Rather, they concluded that for the post-World War II US, the net result of a change in unemployment would produce a dominant opportunity effect leading to a negative response in crime.

The variance of opinion presented in studies through the 70s and 80s necessitates further study to truly understand the “state of economy”-crime relationship. Geographical scope and time seem to be significant contributing factors when assessing U-C. There’s little one can be sure about concluding when considering the aggregate discussion of the literature except, within a national context, unemployment alone does not abstract enough of the economic condition and its effect on individuals lives such that would make it an effective predictor for crime.

## The Phillips Curve

William Phillips presented many of the formative statistical observations from which trivial deductions led to the much-studied link between unemployment and inflation. His 1958 paper brought forth his case for the relation between unemployment and the rate of change of money wage rates in the United Kingdom was subsequently expanded by several economists that agreed in the permanently stable relationship between unemployment and inflation. They theorized that growth associated with falling unemployment would cause inflationary pressure. This is consistent with Keynesian economic theory, where falling unemployment would incur an increase of aggregate demand and therefore and rise of the price level.

The general consensus among contemporary economists who seldom apply the Phillips curve is that the model an overly simplistic tool. When applying the statistical methodology to sample data points it has been shown that no single curve (Chang, n.d.). Calculations gave too high uncertainty to be of any use to policy makers. Regardless, the inverse relationship between inflation and unemployment does still hold validity and even with a temporal dependence can provide some useful context from which to deduce a sensible conclusion.

If we accept the logical deductions provided by economists following the formalization of the Phillips curve, as well as the potential dependence of crime on the rate of unemployment, the arguments for positive relationships of crime with unemployment and inflation become oppositional, in that the inverse relationship of these explanatory variables would contradict their opposing positive relationship with the target.

# Hypothesis

Despite the research regarding these predictors of crime being so apparently contradictory in many cases. They do provide some useful insight in that the relationship of crime to these aggregate metrics is far more complex then would allow one to describe a simple sign-wise relationship. It is apparent that the modelling of crime would be better performed by some multivariate model that could better capture the state of the economy and therefore provide a better model for the quality of life. Even so, in the instance that a perfect multivariate model could be created, we would expect its predictive strength to correlate with some time dependent component as the nature of society evolves with changing lifestyle, supply chain technologies and consumer habits.

Regardless, the computation of the relationship between crime and these economic measures, even in its transience, can provide insight into the expected response of a population from changes in policy. This will surely provide some predictive insight for consideration when constructing policy proposals and when measuring their success after implementation.

Having considered the existing research it is hypothesized that increasing price level will yield a positive response from acquisitive crimes. However, due to improvements in crime prevention policies and infrastructure, the most significant being law enforcement, surveillance and improving social insurances, we would expect this response to be considerably less severe than any of those documented by Fisher in his 1996 works. If we then consider the nature of violent crimes and their tendency to increase with a rising number of transactions across illegal supply chains but also their high individual quality in that, the causes of violent crime are numerate and differ vastly, we can also hypothesize that the relative effect of price level on crime would be far less significant. The mechanism through which an individual decides to engage in violence is perhaps far more complicated than can be described with a macroeconomic model.

# Data and Method

Models were created for both violent and acquisitive crimes using the crown prosecution service’s defined “violent crimes” and burglary as index measures for each respectively. Granger causality testing was then performed using the statsmodel package in python. The output values would give the results testing our hypothesis, that crime does scale with a factor of inflation. The input variables are given by the inflation rate.

The data was collected from an archive that appears on ukcrimestats.com (Lewis, n.d.) which aggregates data collected from the UK police’s open data API. The data is, unfavorably, a record of police recorded crime as data from the ONS’s TCSEW is particularly difficult to source.

The series for violent crimes accounts for murder and manslaughter, throwing of corrosive substances, assault, gun and knife crime, and robbery as defined by the crown prosecution service. Burglary is the illegal entering of a property for the purpose of theft of goods. Values were divided by the millions of national residences to reduce the effect of a changing population and differenced to obtain the change month on month as opposed to absolute values.

Data values for inflation was taken from the ONS’s open data portal. CPIH values were used as they provide the most holistic description of living costs.

## Insufficience

When sourcing data sets for the study it became apparent that the record of crime data in the UK is not of high priority to the UK’s data collection agencies, in particular the Office of National Statistics. The data available is sparse and inconsistent. Crime data is offered at very poor resolution and is spread sparsely throughout documentation spanning releases over several years, where even if compiled would still produce very few data points upon which to perform any of the necessary transformations and processes.

There is reason then, as this early stage, to present a recommendation that for the sake of these inferential studies, that are surprisingly few, data should be collected and compiled such that agencies can offer a time series of sufficient data points and resolution. With the ongoing cost of living crisis in the UK, these may provide a good metric with which to assess the relative success of economic policies.

The data in use for this study, while sufficient in it’s resolution, may prove to be lacking in it’s size for what would be required to make a strong mathematical conclusion. However, regardless of the test outcome, there are many useful observations concerning the nature of this exercise and it’s development through time and what that might imply about the increasing complexity of price indices and other macroeconomic measurements as metrics for life quality.

When considering sample size, there are novel rules that can be applied to provide an idea for the amount of data required for forecasting modelling. They are largely unsubstantiated in theory or practice and it is often found the unique nature of every particular study has more bearing on their ability to provide evidence towards a conclusive outcome.

## Data Description

Having read the data from their respective sources and performed the necessary transformations: concatenating the individual series and dividing the total crime occurrences by the yearly estimated national population in millions (*United Kingdom population mid-year estimate - Office for National Statistics*., 2021) to account for the relative effect of changes in the UK population, and crime occurrences differenced; a matrix of 107x3 values was created.

Chart

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Figure - Complete Time Series Overview. Month on changes in crime incidences per million and CPIH annual percentage change against time.

There are coincidental spikes in both crime incidence time Stacked view of the timeseries confirmed the aforementioned volume concern. In that, at this resolution, it is difficult to compare the shapes in each individual series with the annual inflation rate. There are coincidental spikes in both crime incidence series. 64% of the datapoints for the annual change in crime are similar vectors (sign-wise similarity). This reinforces the expectation derived from the logic that concerns the relationship between acquisitive and violent crimes. We would expect the supposed response of crime from a change in inflation should have some lag.

A picture containing timeline

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Figure - Complete Time Series Overview. Month on changes in crime incidences per million and monthly on change in CPIH annual percentage change against time.

## Test Method

To assess the strength of any existing relationship, granger causality tests were used. Statsmodels (*Release 0.13.2 — statsmodels*., 2022) includes functionality to perform such tests. Testing was performed at 4 different lags related to the rhythm of business cycles in the UK: 1 month, 3 month, 6 month and 12 month.

It is a requirement for the implementation of granger causality testing that the timeseries have a unit root and are therefore stationary. The time series, dViolent and dBurglary, were assessed using an augmented Adfuller test (*statsmodels.tsa.stattools.adfuller — statsmodels*., 2022) and produced p values, 0.79 and 0.069 respectively, providing little evidence to reject the null hypothesis that each series do not have a unit root. To rectify this, a second difference was taken to produce ddBurglary and ddViolent variables.

Timeline

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Figure - Complete Time Series Overview. Second derivative crime incidences per million and monthly on change in CPIH annual percentage change against time.

These new variables were also tested using the Adfuller function and produced p values, and respectively, which suggest sufficient evidence for the rejection of the null hypothesis and assumption of the existence of a unit root, where a threshold of is considered reasonable.

The output of the tests is given by the results of a chi square test. The null hypothesis, that CPIH does not granger cause the target time series, is rejected if the test produces a p-value higher than the threshold . In this case, there is sufficient proof to suggest that lagged terms of the CPIH time series have non-zero coefficients and therefore contribute predictive power to the model.

# Results

|  |  |  |
| --- | --- | --- |
| Lag | p-value | |
| **ddViolent** | **ddBurglary** |
| 1 | 0.2515 | 0.2254 |
| 3 | 0.0808 | 0.1099 |
| 6 | 0.0310 | 0.4178 |
| 12 | 0.0246 | 0.0100 |

The results do confirm that changing price level does indeed have a lagged influence over acquisitive and violent crimes. The p-values allow us to reject the null hypothesis at a lag of 6 months for violent crimes and 12 months for acquisitive crimes. For violent crimes values 0.0310 and 0,0246 suggest the existence of non-zero coefficients lags of 6 and 12 months respectively. For burglary the test at a lag of 12 months produced a value of 0.0100 and provides sufficient evidence for the rejection of the null hypothesis.

# Discussion

The test output was surprising to say the least. Having completed the data collection and required transformations there was little evidence that the test, with use of only a very small sample, would produce evidence for any definite conclusions. The study exceeded that expectation and allowed us to confirm our general hypothesis. However, the model retaining terms at as few as 6 lags for violent crimes, as opposed to 12 for acquisitive crime, antagonizes the logic we outlined earlier.

The results suggest that perhaps our understanding of the individual nature of violent crimes and our expectation towards the macroeconomic mechanisms indirectly contributing towards it’s changes through their influence acquisitive crime are perhaps flawed. While granger causality is not, by itself evidence to prove true causality, it does provide a useful metric to measure the truth in our underlining assumptions. It seems that violent crimes may have a more significant economic component than has been previously documented. This result is very much in agreement with traditional strain theory (Merton, 1938) in that the effects associated with falling life quality, or social strain, incentivizes violence. This surely has severe implications during this current period of high inflation globally and while this study presents concern for the UK, further studies should investigate the nature of this relationship around the world.

The current UK economic crisis, dubbed the “cost of living crisis”, is very reminiscent of the price revolutions described in Fischer’s 1996 works. The complexity of the macroeconomic mechanism of the criminal choice has been well documented. A review of the literature taught us that the relationship between crime and these numerous economic measures changes with time. Fischer reminds us that under specific conditions, scarcity, increasing inequality, decreasing trust in institutions can create a hot bed for political descent and social chaos. We can all draw anecdotal evidence from various sources to prove, at the very least, awareness of social and political divisions across the western world. This social context, coupled with the rising inflation may be cause for serious concern within political circles in the UK.

A recent conversation I had with my friend on the topic saw me quote the Mark Twain epigraph “History does not repeat itself – but it rhymes”. Considering the results of this experiment I believe it would be more then advisable for study of the price revolutions of the last thousand years be made a higher priority and referenced more often. Fischer’s work, referenced several times, was the main source of inspiration for this study. It was a stark reminder of the dangers of trickle-down economics and the role of unequal systems creating hotbeds for violence and chaos. Most of the book’s own references fall before the time of industrial revolution. But, even with the changes to lifestyle and government brought in after the introduction of the new industrial world there are factors that mirror that of those times where price revolution caused severe reduction in living standards. One important difference, between those pre-industrial periods and our present time, is that the complexity of price level modelling has risen exponentially since the advent of consumerism. Through the majority of the last millennium only few items might have been considered for the design of a representative market basket. The indices used in Fischer’s analysis include the D.L. Farmer wheat index and the Phelps-Brown-Hopkins price index of consumables. Both of which employed a far more modest number of goods in their respective market baskets including good’s such as: grain, vegetables, fish, butter, cheese, drink, fuel and textiles (Fischer, 1996). The office of national statistics collects around 180,000 prices of 700 different items for it’s own calculation of inflation. Both difficulty in formalizing a market basket and ease of interpretation scale positively and negatively with increasing complexity. The interaction between the price of individual goods and crime may be lost with such high level of abstraction. Future studies that focus on the influence of the price of specific goods and a comparison of their individual influences on crime.

Fischer identifies inequality being a main contributor that would inspire negative expressions of discontent. We might not expect that the response to soaring inflation be much like those that were observed during that preindustrial period. The end of feudalism saw a distinct change in interaction between working and ruling classes. In addition, the advent of technology, and most recently, more sociable media acts to further modify this interaction. Whereas, at some time citizens may have had very little input upon which to base their opinion on leader, in this modern digitized era, leaders have more channels through which to relate to their voters and thus may be able to affect the response to economic conditions. We may find that the strength of the relationship between economic output and crime to be a function of constituent (citizen) opinion which I subject to change over time. This study would require some index of that changing opinion over time for statisical inference

I hope it does not detract from the conclusion to mention that the study has affirmed my personally held political beliefs, which for the last two years have been the source of increasing frustration. It is often that in conversation with individuals we meet that we are able to identify, through mostly anecdotal evidence or basic statistics learnt from news broadcasts, social mechanisms that seem completely enigmatic to the ruling classes in this country. Through the duration of this study, I have learnt that, perhaps unsurprisingly, crime is not a particular policy priority of the UK government, which is worrying. This was made evident by the difficulty to obtain reliable and consistent crime statistics, even for index crimes, for any period longer than 10 years, and even then, the timeseries was only available in their entirety from a third-party compilation.

The issues with crime statistics exceed the fact of their lacking volume but also account for their inconsistency. During the data collection stage of the project, I spoke to a Mr. D Lewis, who is owner of the UKCrimeState.com domain, he explained that the timeseries for many of the crimes he had compiled values for were inconsistent in that their definitions had changed over time. It was for that reason that I chose to perform my analysis on index crimes, both with consistent definitions over the period, that I hoped would provide some useful context. I’d like to recommend that, for the sake of future studies, that not only should crime data timeseries be held, even with their difficulty in collection and compilation, high in the priorities of UK data collection agencies, but also, a crime index be designed that should account for the changing nature and severity of crimes in the UK. This could be achieved with some abstract rating and then weighting of occurrences through the impact they have on society and individuals. That metric alone might provide a better measurement for the success of economic policies than any of the individual macroeconomic measures. As in with the problem of price indexing, that requires standardization to maintain consistency, the problem of collating statistics for crime suffers from extreme multidimensionality. The raw statistics alone show very little that can help produce a reflective image of the current state such that any effective or interpretable analysis can be done. The discussion then begs for question of motivation. We can ask, with the context we’ve gained through this process, what is the aim of collecting crime statistics if not for indexing and study. It is deeply concerning that there does not seem to be any apparent mechanism to collect and ready these figures for study and so we can also assume they are not being used towards their full potential for assessment of policy changes. A follow up study to understand the methods used to design policy could offer some insight regarding their workflow and the process used to innovate, through interview or review of policy proposals.

There is also something to be said regarding the power of statistical data to form public opinion. Crime stats are often used in news reporting to create and sell a specific perspective. Publishing reliable crime data could act to inspire public mistrust of authority. Hopefully without getting too political it is important to acknowledge the continued demonization of unemployed people in this country. With that consideration it is fair to argue that within a society that upholds capitalist ideals at the core of it’s operation, the argument for higher unemployment rates causing an increase of crime acts to justify it's social mechanism. The recent release of a recording from current UK Prime Minister adds weight to this argument. The audio clip, within which Liz Truss is recorded saying British workers are need “more graft” (Crerar, 2022), is a prime example of the current political attitude in the UK. The conclusions reached thus present evidence for the opposing view it has presented a strong case for inflation being a driver that motivates the increase of crime in the UK.

The confirmation of statistical causality of increasing crime by increasing inflation does indeed also act to contradict the well documented positive correlation crime has been observed to have with unemployment. Future studies would do well to explore the temporality of that contradiction as here may be additional variables that would better capture the transience of both these arguments.

In conclusion, while the data does provide sufficient evidence to support our hypothesis that inflation does indeed have some statistical correlation with crime, we would expect that there is some temporal transient quality to the argument. Opinions presented through literature of the last 70 years presents a diverse opinion consistent with the hypothesized time dependence. More conclusive results could be found with stronger data. Crime data currently does not provide a representative sample such that strong conclusions can be made easily. Policy makers could benefit in the short and long term by providing more a consistent series of, at least, index crimes.

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The project was concerned with assessing the effect of inflation on the level of UK crime. The links between psychology and economics have been long studied but with the abilities afford to us by modern computing it is possible, with sufficient data, to approach these queries with quantitive methods. The study is of topical relevance while the UK suffers a cost of living crisis that has produced record high inflation and it is my aim to prove the viability for these statistical methods to provide metrics through which to better assess the effect of policy decisions. The literature agrees that inflation should have some measurable effect but disagrees regarding it’s direction or magnitude and it became apparent that the observed relationship had transient quality that changed with time. Despite having faced many difficulties collecting any consistent data I was able to provide evidence for granger causation of inflation on crime at lags of 6 and 12 months for violent and acquisitive crime respectively and concluded that the relationship was significant retgardless of it’s transcience and that ongoing study of the relationship through might provide more useful dimensions with which to build a predictive model for crime. I have recommended that crime stats be indexed for consistency as it is difficult to conduct these inferential studies without consistent time series data.