Decomposing violence: terrorist murder in the twentieth century in the U.S.

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Decomposing Violence: Terrorist Murder in The Twentieth Century in the United States**

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Abstract: I apply the Beveridge-Nelson business cycle decomposition method to the time series of murder in the United States (1900-2004). Separating out "permanent" from "cyclical" murder, I hypothesize that the cyclical part coincides with documented waves of organized crime, internal tensions, breakdowns in social order, crime legislation, alternation in power, social, and political unrest overseas as wars, and recently with the periodic terrorist attacks in the country. The cyclical component estimated shows that, 9/11 2001 terrorist attacks occurred, two years after the end of the last declining cycle of 1994-1999. The estimated cyclical terrorist murder component warns, that terrorist attacks in U.S., soil from 1923 to 2004, historically occur in, and around the vicinity of the turning points, of whether a declining, or ascending cycle, and so, it must be used in future research to construct a model for explaining the causal reasons for its movement across time, and for forecasting cyclical terrorist murder, and terrorist attacks.

Keywords: United States; Colombia; murder, Beveridge-Nelson; business cycle; decomposition; time-series; domestic terrorism; cyclical terrorist murder; cyclical terrorist attacks, cyclical terrorist murder and attacks indicator.

JEL classification codes: C22, D74, H56, N46, K14, K42, N42, O51.

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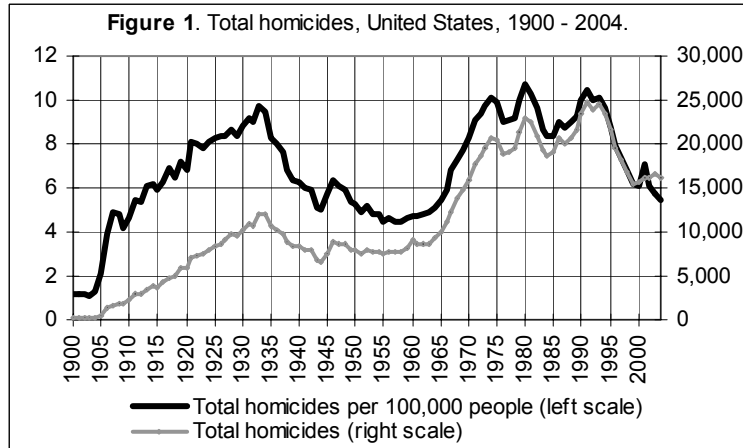
1. Introduction

After decomposing violence, and creating a model for the cyclical component of murder in Colombia: *a model of cyclical terrorist murder in Colombia* (Gómez-Sorzano, 2005, 2006A and 2006B), one of the countries considered in the past, as the most violent in the world (with its highest peak in murder reaching 89 murders per 100,000 in 1991 as a consequence of the continued civil conflict), this paper continues that methodology research applied to the United States' case during the time period from 1900 to 2004. One of the main findings of the estimated cyclical terrorist murder series for the U.S. confirms, that the crime drop in America ended up in 1999 (with its lowest point shown in figure 4, with a murder rate of 0.5 per 100,000 people) two years before the terrorist attacks of 9/11 2001; a situation suggesting, that the estimated component predicted the attacks, as occurring in the vicinity of a declining cycle (two years after its end) and that it must be used, to construct a model for explaining the causal reasons for its movement across time.
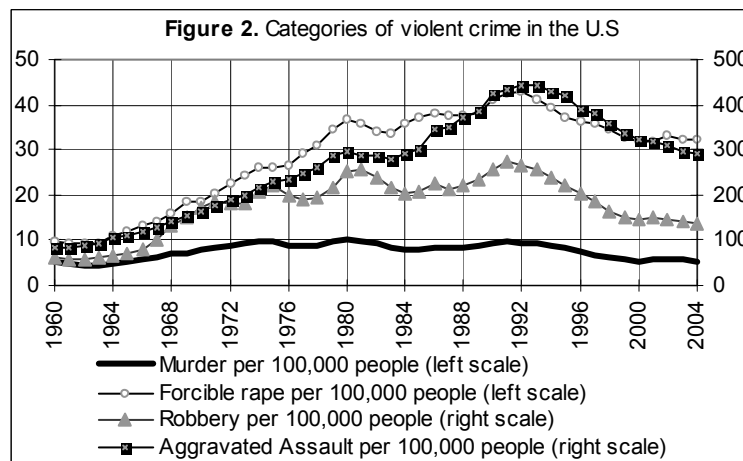
According to the National Center for Health Statistics total homicides in the U.S. increased from an average of 962 per year in the 1900s to an average of 4,090 per year in the 1910s, reaching a first peak in 1933 with 12,124 homicides, and second, third, and fourth peaks in 1974, 1980 and 1991 respectively with 20,710, 23,040, and 24,700 homicides (fig. 1). Although total violent crime appears now dropping in America during the last years, particularly descending from 1992 with 23,760 homicides to 2004 with 16,137 homicides[1], this research shows that terrorist murder in the U.S. grows from 2000 to 2004 with rates of 0.69, and 2.48 per 100,000 people respectively (Fig. 4).

When adjusted for population growth, i.e., homicides per 100,000 people in the population, a somewhat almost identical pattern emerges. A rapid per capita increase occurred from 1905 to 1933, followed by an eleven-year sub period 1934-1944 of constant murder reductions (Fig. 1). Later a small jump from 1945 to 1946, and a new downward trend from 1947 to 1961, and then shows exactly the same pattern as for the absolute numbers.

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[1] Surprisingly, these dates coincide also with the beginning of the crime drop in Colombia with 28,140 homicides in 1992, and 20,133 for 2004.

Figure 1. Total homicides, United States, 1900 - 2004.

Total homicides per 100,000 people (left scale)
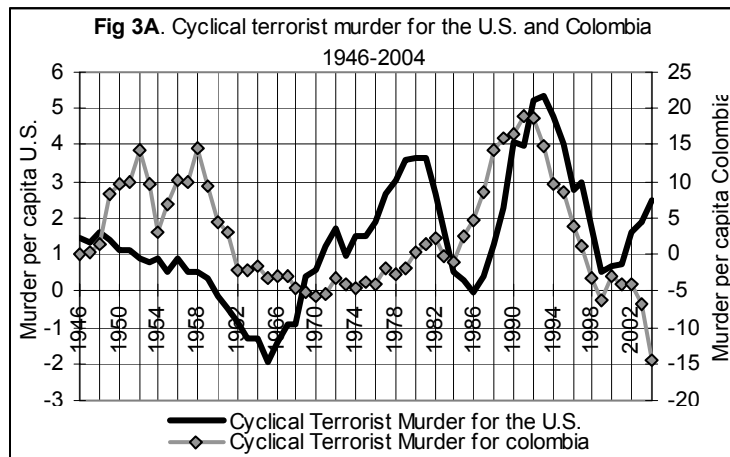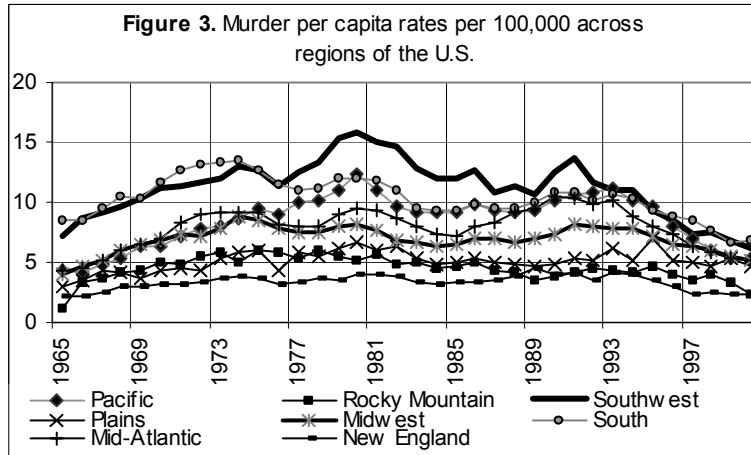Total homicides (right scale)

Out of the country's four categories of crimes, measuring violent crime in the U.S., (murder, forcible rape, robbery, and aggravated assault) murder is the one that varies the least from 1960 to 2004 (Fig. 2). Forcible rape has been the most difficult to measure (Blumstein and Wallman 2002, pp.15-19) write that because the stigma associated with rape, and because police have often been insensitive to rape victims' emotions, the percentage of rapes reported to the police is about the lowest of the FBI's Uniform Crime Reports (UCR), and so changes in reporting rates can be an important factor contributing to changes in the UCR rate of rape. The two crimes that are best measure in the UCR are murder, and robbery, largely because these offenses are reasonably well defined, and their definitions have been stable over time.

Figure 2. Categories of violent crime in the U.S

Murder per 100,000 people (left scale)
Forcible rape per 100,000 people (left scale)
Robbery per 100,000 people (right scale)
Aggravated Assault per 100,000 people (right scale)

Although the country's murder per capita rate appears as without a trend (Fig.1), there have been major changes over time, and across regions (Fig. 3), the southwest region has historically shown the highest peak in crime with a rate of 16/100,000 while the lowest when analyzing the data from 1965 on, is found in the Rocky Mountain region that year with 1/100,000. Nevertheless those rates appear as normal when compared with the rest of the world particularly with the city of Apartadó Colombia with a rate of 900/100,000 (Guerrero 1998, p.97). Fig 3A, shows similar patterns for terrorist murder

for the U.S[2], and Colombia; however, while the U.S. series increases from 2000 onwards, Colombia decreases as a consequence of the end of the civil conflict (Gómez-Sorzano, 2005, 2006B).

Figure 3. Murder per capita rates per 100,000 across regions of the U.S.

Pacific — Rocky Mountain — Southwest
Plains — Midwest — South
Mid-Atlantic — New England

Fig 3A. Cyclical terrorist murder for the U.S. and Colombia 1946-2004

Cyclical Terrorist Murder for the U.S.
Cyclical Terrorist Murder for colombia

The U.S. murderous violence appears indeed cyclical, and related with several features, repeating over time (i.e., from 1900 to 1934) (Fig 1), appears related with immigration, the mafia era, and the prohibition years. From 1935 to 1963 with crime legislation and World War II, and minor wars fought by the U.S. abroad as, the Korean War (1950-1953), the Vietnam conflict (1964-1973), the terrorist murder of a notable as president Kennedy, and the breaking down of the social order, related with the Watts Riot, a five day riot in the Watts section of Los Angeles in 1965.

From 1966 to 1981 is related with breakdowns in the social order after the largest, and most tragic riots occurred at Newark and Detroit in July 1967 (Clark 1970, p.167), and Martin Luther King Jr's assassination in 1968, and crime legislation favorable to the defendant's rights. Recently in the 1990's is again related with minor wars, the Persian Gulf War (1990-1991), the war on drugs in Colombia from 1985 to 1992, the Rodney

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[2] The estimated component of cyclical terrorist murder for the U.S., is explained in the section for data and methods.

King riots in Los Angeles, and the World Trade Center Bombing precisely occurring the year of a turning point. From 1994 until present is marked again with strong crime legislation by President Clinton, and the war on terrorism, the attack on Afghanistan, and Operation Iraqi Freedom (2003-2006) by President George W. Bush.

This hypothesis of cycles in violence is sustained additionally, to explain the recent sharp rise in violence by young people during the late 1980s and the corresponding sharp decline in the 1990s: (Blumstein and Wallman 2002, p.39). They consider that if the observed process of a rise, followed by a subsequent decline is cyclical with a reasonably well-defined cycle time, perhaps the difference between the larger, and the smaller cities is merely one that reflects the lag in the initiation of the process: the large cities start first, and then the smaller ones follow. Indeed some authors have found that this is a possible explanation (Blumstein 1995). He explains the rise phase as due to the introduction of crack in the mid-1980s; recruitment of young minority males to sell the drugs in street markets; arming of the drug sellers with handguns for self-protection; diffusion of guns to peers; irresponsible and excessively use of guns by young people.

In regards to the decline in the 1990s many authors consider, it is attributable to incapacitation associated with the doubling of the incarceration rate since 1985. In fact the best of top-down studies measuring incapacitation rely on a panel data-set collected by Marvell and Moody (1994), and improved by Levitt (1996) (in Spealman 2000, p.120); it contains a wide variety of control variables that can be expected to influence crime rates: by controlling explicitly for the effects of income, unemployment, age structure, and other characteristics, the effect of prisons on crime can be isolated. The conclusion considers that the prison population build up was an important contributing factor to the violent crime-drop.

As to policing, there is the belief that increasing the number of police officers per capita is an effective method for reducing crime however; Eck and Maguire (2000, p.208) mention they are not aware of a single empirical study that supports that claim, and on the contrary some cities experiencing the greatest reduction in crime did so without increasing the number of officers (i.e., among the twenty-five largest cities in the U.S. San Diego, and New York experienced the greatest decrease in crime from 1990 to 1996 more than forty percent, however the number of police officers per capita grew by 18 percent in New York, and only 1 percent in San Diego).

While future research will have to identify, and confirm the possible causes of terrorist murder in the U.S., my concern in this paper is limited. On the hypothesis that: 1) waves of organized crime, internal tensions, crime legislation; social, and political unrest overseas, and terrorist attacks and murders in U.S. soil are cyclical, and 2) that these facts are hidden in the per capita murder series, and 3) using both, the classical[3], the

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[3] E.g., terrorism is the premeditated use or threat to use violence by individual or sub-national groups in order to obtain a political or social objective through the intimidation of a large audience beyond that of the immediate victims.

U.S. Department of Defense[4], and the broad definition for terrorism[5] (Enders and Sandler 2006, pp.3-4), I apply a business cycle decomposition method to the murder per capita series, calling it the estimated transitory component of murder or *cyclical terrorist murder*. I begin to compare it, with the narrative historical account of violence in the U.S., finding a good match.

As in the study case for Colombia (Brauer, Gómez-Sorzano and Sethuraman, 2004), I find a good overlap, a positive relation between my estimates of turning points in the cycle and the narrative of the country's waves of internal violence. In regard to the subset of terrorist attacks, or terrorist murder in U.S. soil, I find them, strictly occurring, whether just before or after a descending or ascending cycle, but clearly marked by the closeness to the turning point (e.g., the attack on Pearl Harbor was committed in the vicinity of the end of a declining cycle: 8 December 1941, one year before the end of my estimated descending terrorist murder cycle of 1935-1942, (Fig.4).

The assassination of President John F. Kennedy in 1963, happened two years prior to the end of my estimated descending terrorist murder cycle of 1948-1965[6]; while the murder of Dr. Martin Luther King Jr. occurred three years after it, in 1968. The bombing of the Alfred P. Murrah federal building in Oklahoma, occurred in 1995, two years after the end of my estimated ascending cycle of 1987-1993, while 9/11 2001 terrorist attacks, happened two years after the end of my estimated, declining terrorist murder cycle of 1994-1999).

I claim in this research, that I have found a way to gauge turning points of "internal social unrest, and violence", and most importantly, a method that disentangles the timing of terrorist murder and terrorist attacks in U.S. soil.   The next sections present, the data and model used, followed by the interpretation of my estimated cyclical terrorist murder indicator when compared by the historical account of violent facts and terrorist attacks and murder, in U.S. soil.

2. Data and methods

The Bureau of Justice Statistics has a record of crime statistics that reaches back to 1900, (for this analysis I use the murder rates per 100,000 people[7]). As is known, time series can be broken into two constituent components, the permanent and transitory component. I apply the Beveridge-Nelson (BN for short 1981) decomposition technique to the United States series of murders.

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[4] Defines terrorism as "the unlawful use or threatened use of force or violence against individuals or property to coerce or intimidate governments or societies, often to achieve, political, religious, or ideological objectives" (White, 2003, p.12). A1ccording to this Los Angeles riots is considered terrorism.

[5] E.g., a more pragmatic approach taken by the United Nations after 9/11, that defines terrorism as violent acts perpetrated by sub-national groups to target non-combatants.

[6] The strange blackout in power in New York City on 9 November 1965 occurred precisely, the year of the turning point (Fig 4), the most peaceful year during the twentieth century.

[7] Taken from (http://www.ojp.usdoj.gov/bjs/glance/tables/hmrttab.htm, accessed February 11,2006).

Beveridge and Nelson decomposition

I use the augmented Dickey Fuller (1981), tests to verify the existence of a unit root on the logarithm of murder 1900-2004. These tests present the structural form shown in equation (1).

$$\Delta L \hom_t = \alpha + \theta. t + \phi L \hom_{t-i} + \sum_{i=1}^{k} \gamma_i \Delta L \hom_{t-i} + \varepsilon_t \qquad (1)$$

The existence of a unit root, is given by (phi) $\phi=0$. I use the methodology by Campbell and Perron (1991), in which an auto-regression process of order k is previously selected in order to capture possible seasonality of the series, and lags are eliminated sequentially if: a) after estimating a regression the last lag does not turn out to be significant or, b) if the residuals pass a white noise test at the 0.05 significance level. The results are reported on table 1.

Table 1 Dickey & Fuller test for Unit Roots

Series	K	Alpha	Theta	Phi	Stationary
D(lthomp100) – murder series for the U.S.	1	0.157	-0.00001	0.919	No
		(4.17)	(-0.03)	**(41.11)**	

Notes: 1. K is the chosen lag length. T-tests in parentheses refer

To the null hypothesis that a coefficient is equal to zero.

Under the null of non-stationarity, it is necessary to use the Dickey-Fuller critical value that at the 0.05 level, for the t-statistic is -3.45 (sample size of 100).

After rejecting the null for a unit root (accepting the series is non stationary), I perform the BN decomposition which begins by fitting the logarithm of the per capita murder series to an ARIMA model of the form (2):

$$\Delta Lt \hom_t = \mu + \sum_{i=1}^{k} \gamma_i \Delta Lt \hom_{t-i} + \sum_{i=1}^{h} \psi_i \varepsilon_{t-i} + \varepsilon_t \qquad (2)$$

Where k, and h are respectively the autoregressive and moving average components. The selection of the ARIMA model is computationally intense. My search for the right model for the period 1900-2004 stopped with an ARIMA (22,1,10) ran with RATS 4, shown in table 2, and including autoregressive components of order 1,3,6,8, and 22, and moving average terms of order 6,7, and, 10; the model is unique at providing a cyclical component oscillating around a zero average:

Table 2. Estimated ARIMA model for murder in the U.S

Annual data from 1900 to 2004

Variables	Coeff	T-stats	Std Error	Signif
Constant	0.0098	4.32	0.0022	0.0000
AR(1)	-0.2644	-2.41	0.1096	0.0183

AR(3)	-0.1990	-3.59	0.0553	0.0005
AR(6)	-0.4796	-9.66	0.0496	0.0000
AR(8)	0.2236	3.81	0.0585	0.0002
AR(22)	0.0366	13.69	0.0026	0.0000
MA(6)	2.1668	10.41	0.2080	0.0000
MA(7)	1.3816	10.91	0.1265	0.0000
MA(10)	1.0207	6.03	0.1691	0.0000

Centered R^2 = 0.97

DW= 2.03

Significance level of Q = 0.0078

Usable observations = 82

The nine parameters of the model, are replaced in the equation for the permanent component of murder shown in (3)[8]:

$$L\,\text{hom}_t^{PC} = L\,\text{hom}_0 + \frac{\mu.t}{1-\gamma_1 - \ldots \gamma_k} + \frac{1+\Psi_1 + \ldots \Psi_h}{1-\gamma_1 - \ldots \gamma_k} \sum_{i=1}^{t} \varepsilon_i \quad (3)$$
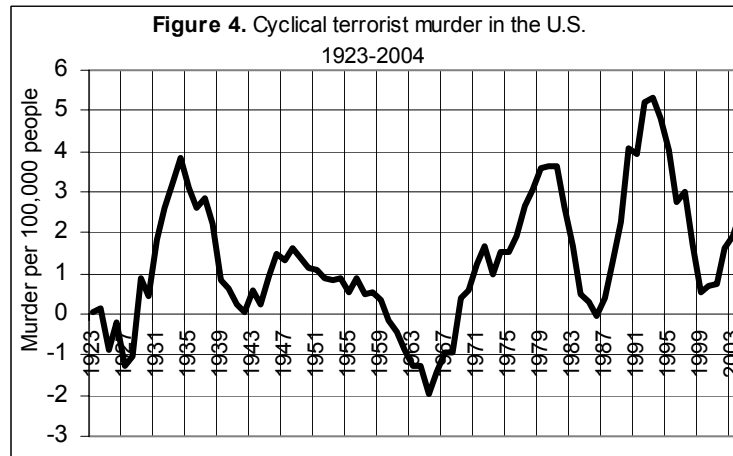
The transitory or cyclical terrorist murder estimate is found by means of the difference between the original series, and the exponential of the permanent per capita component ($L\,\text{hom}_t^{PC}$)[9], and is shown in figure 4. It matches the qualitative description of known waves of organized crime, internal tensions, crime legislation, social, and political unrest overseas[10], and disentangles the timing for terrorist attacks, and terrorist murder in U.S. soil[11]. To compare this historical narrative of events with my estimates for cyclical terrorist murder I use the chronology, and description of facts taken from Clark (1970), Durham (1996), Blumstein and Wallman (2000), and Bernard (2002).

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[8] The extraction of permanent and cyclical components from the original series is theoretically shown in BN (1981), Cuddington and Winters (1987), Miller (1998), Newbold (1990), and Cárdenas (1991). I show the mathematical details for the U.S.' case in appendix A. Eq.3 above, turns out to be Eq.17 in appendix A.

[9] Turning the estimated permanent per capita component into the level of the permanent component.

[10] As the case of World War II, Vietnam Conflict, Persian Gulf War, the war on drugs in Colombia, and recently Operation Iraqui Freedom. All of them, occurring inside ascending cycles of my estimated cyclical murder component.

[11] As to its recent movement, it warns that the drop in cyclical terrorist murder in U.S. soil began in 1994 ending up in 1999 (e.g., two years before 9/11 2001 terrorist attacks).

Figure 4. Cyclical terrorist murder in the U.S. 1923-2004

Murder per 100,000 people

(vertical axis: 6, 5, 4, 3, 2, 1, 0, -1, -2, -3)

(horizontal axis: 1923, 1931, 1935, 1939, 1943, 1947, 1951, 1955, 1959, 1963, 1967, 1971, 1975, 1979, 1983, 1987, 1991, 1995, 1999, 2003)

3. Interpretation of results

It appears in Fig. 4 that there are five major periods on my estimates for cyclical terrorist murder in the U.S. A period is defined as the time-frame including turning points for both, the declining, and rising of the phenomenon with no consideration to which one precedes. According to this, the first period occurs from 1923 to 1934; the second from 1935 to 1948; the third, and longest one (32 years) from 1949 to 1981; the fourth, from 1982 to 1993, and the current one, starts in 1994 lasting to present time.

3.1. *The first period:* 1923 – 1934. Historical facts: The Eighteenth Amendment[12]. Prohibition years.

The Republican Party's Calvin Coolidge assumed the country's presidency in 1923. This period is marked by the 18th amendment and the prohibition years (Durham 1996, p.10). Contraband liquor was usually either brewed in illegal distilleries or brought in from Canada or Mexico. Competition among rival organizations led to hundreds of deaths during these years, my estimates for terrorist murder pass from 0.04 per capita in 1923 to 3.22 in 1933). Once the 18th amendment was repealed in 1933, crime syndicates continued gambling enterprises, loan sharking, and other illegal activities. Bootlegging however did not entirely disappear, because black-market alcoholic beverages were usually cheaper than legally produced liquor.

In 1929 Republican, Herbert Clark Hoover assumed the presidency, creating a commission to investigate law enforcement problems associated with prohibition. Eliot Ness is charged with assembling a small force to combat the influence of Alphonse Capone's bootlegging operations in Chicago. Ness chooses nine officers who have flawless records, and are experts in marksmanship, wiretapping, and other activities essential to fighting Capone, and baptizes them ten-man forces "the Untouchables."

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[12] Amendment to the U.S. Constitution enacted from 1920 to 1933 to prohibit the manufacture and sale of alcoholic beverages.

In 1931 the Wickersham Commission issues a report on defects in the criminal justice system calling for major reforms in law enforcement, and in the judicial system; however few reforms were implemented and cyclical murder continued to rise (Fig. 4). In 1933, Democrat Franklin Delano Roosevelt assumes the presidency, appointing J. Edgar Hoover as FBI chief who declares war on *"public enemies"* in 1933; additionally the enacting of the 21st amendment, and nullifying of the 18th, put an end to the prohibition years, and so my estimated cyclical murder shows, that this ascending cycle, characterized by the mafia era ended up in 1934 with a rate of 3.85 terrorist murder per capita) after the Congress passes the Federal Bank Robbery Act.

3.2 . *The second period:* 1935-1948.

Descending cycle 1935-1942. Historical facts: Pearl Harbor attacks (first terrorist attack on U.S. soil).

In 1935 former Untouchables leader Eliot Ness becomes public safety director in Cleveland, ridding the city of Mayfield Road Mob, and its gambling, prostitution, and bootlegging operations. Transitory murder declines to 3.11 per capita (Fig.4).

In 1936 Congress passes the Federal Kidnapping Act, which makes kidnapping a federal offense; Frank J Wilson, whose agents had previously infiltrated Alphonse Capone's bootlegging operation in Chicago, becomes head of the Secret Service, and starts pursuing producers of counterfeit currency. In 1940 Congress passes the Smith Act, designed to punish those who advocate the overthrow of the government by force, sedition or, treason. The Act is passed with the threat of U.S. involvement in World War II looming.

On 7 December 1941, a Japanese fleet of 370 planes attacks Pearl Harbor, sweeping away the desire for American neutrality in the war; according to my interpretation, this becomes the first terrorist attack on U.S. soil, occurring one year prior to the end of this declining cycle in 1942 with a rate of 0.06 terrorist murder per 100,000. Franklin Roosevelt, who had believed war to be imminent many months prior to Pearl Harbor, now has the fervent popular backing needed, and declares war with Japan on 8 December[13]. Five days later, Germany, and Italy declared war in America (Bernard 2002, p. 499).

Ascending cycle 1943-1948. Historical fact: World War II.

In April 1945, following President Roosevelt's death, Vice-President Harry S. Truman assumes the presidency. Cyclical terrorist murder was on the rise during World War II, but it slowed down, after Hitler's suicide and Berlin surrender on 30 April, and 2 May 1945 respectively (Fig.4).

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[13] America's entry into World War II heralded a fundamental change in the political, social, and economic landscape of the country. The war sparked a spectacular boom in the nation's economy. Unemployment vanished, wages increased and war rationing was minimal (Bernard 2002, p. 502)

Japan surrendered on 2 September 1945 after Hiroshima and Nagasaki's attacks of 6, and 9 August respectively (Bernard 2002, 507).

3.2. *The third period*: 1949-1981.

Descending cycle 1949-1965. Historical facts: the preservation of defendants' rights era, President Kennedy's terrorist assassination, Los Angeles riots (Watts section), first terrorist attack in New York City: one day power blackout.

By the end of World War II, organized crime begins to attract national attention. In 1950 Congress passes the Hobbs Act, forbidding the use of theft, extortion, and violence to interfere with interstate commerce. In 1952 the enactment of the Travel Act makes it a federal violation for a person to travel, or to use interstate and foreign commerce to commit a crime. The act is amended twice, in 1961 and 1976.

After his inauguration in 1953, Republican Dwight David Eisenhower appoints Earl Warren chief justice of the United States' Supreme Court, starting an era of legal decisions aimed at preserving defendants' rights; cyclical murder decreases from 1953 to 1959 (from 0.81 per capita in 1953 to 0.34 in 1959, fig.4). In 1961, Democrat John F. Kennedy assumes the presidency, sending in 1962 several thousands of U.S. military advisers to South Vietnam to train soldiers loyal to the country's anti-communist president Ngo Dinh Dim. The U.S. sought to build up South Vietnam's defences against communist encroachment from the north, but in the process South Vietnam forces failed, communist (Vietcong) gained control of rural areas (Bernard 2002, p.726).

On 22 November 1963 according to my estimates, two years prior to the end of this descending cycle (with an estimate for terrorist murder of –1.29, fig. 4), President Kennedy is murdered. Vice-President Lyndon Baines Johnson takes the presidential oath of office. The cycle ends with consecutive riots in Los Angeles on August 1965[14], and the massive looting that occurred in New York City on 9 November 1965 (when the city lost power for one day), starting a new upward tendency. According to my estimates, 1965 shows the lowest rate in terrorist murder during the twentieth century with a rate of –1.94 per 100,000 people.

Ascending cycle 1966-1981. Historical facts: the anti-poverty approach to crime era. The Vietnam conflict; the breakdown in social order, following Martin Luther King Jr's murder; and Newark, New Jersey and Detroit Michigan riots.

From 1966 forth, American society is torn apart by student protests, the counter-culture movement and racial unrest, all related in different ways to the escalating U.S. involvement in the war in Vietnam. Critics alleged that the reports by the Commission on

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[14] At Watts, the riots started as a consequence of an arrest for drunken driven, accomplished only after an "officer in trouble" call, and following a long argument on a hot Wednesday evening while a crowd gathered and a mother berated the police. When the flames died down in Watts, thirty-four people were dead: twenty-eight Negroes, three Mexican-Americans, one Japanese and two law enforcement officers. Eight hundred and seventy five were injured (Clark, 1970, p.144, and p.166).

Law Enforcement and Administration of Justice, chaired by attorney General Nicholas Katzenbach did more to guard civil rights than to fight crime; cyclical terrorist murder was ascending sharply from 1966 to 1967[15] (from –1.41 in 1966 to –0.91 in 1967, fig. 4), leading to the passage of the Omnibus Crime Control and Safe Street Act of 1968, which was criticized later for the anti-poverty approach to crime rather than for policies designed to punish criminals.

During the 1968 presidential campaign, Nixon repeatedly criticized Johnson's approach to crime control, arguing that his "War on Poverty" contributed to an increase in the crime rate (e.g., from 1966 to 1968 cyclical murder increased from –1.41 to -0.93 per 100,000 people)[16]. The breakdown in social order following Martin Luther King Jr.'s assassination on 4 April 1968, deeply contributed to the continued increase in murder during this period[17].

In 1969, Republican Richard Milhous Nixon assumes the presidency. Under his administration, Congress passes several major pieces of crime legislation; in July 1970, Congress passed the District of Columbia Crime Control bill, and the Organized Crime Control bill. In spite of legislative efforts to curb crime, statistics continues to go up, and so my estimates show this continued upward trend in cyclical terrorist murder from 1969 to 1972 (a further increase from 0.39 per capita in 1969 to 1.69 in 1972) (Fig. 4).

Each subsequent administration continued to push for congressional crime legislation. In 1974, Republican Gerald Rudolph Ford assumes the presidency, signing a bill that united federal juvenile justice programs under the Law Enforcement Assistance Administration and in 1976 signed the Crime Control Act of 1976 authorizing the Law Enforcement Assistance Administration (LEAA) for another three years.

In 1977, Democrat Jimmy (James Earl) Carter assumes the presidency for the period 1976-1979. During his administration the effectiveness of the LEAA came under discussion, to such a point that, the Justice System Improvement Act (Public Law 96-157), passed in 1979 greatly diminishing the authority of the LEAA. This act created the Bureau of Justice Statistics, the National Institute of Justice, and the Office of Justice, Assistance, Research, and Statistics. Durham (1996, p.6) explains how critics during this time period 1966-1979, complained about the disorganized nature of existing criminal statutes. National criminal laws, one critic has argued, form a "fairly random collection of criminal statutes passed at different times for different purposes, all criminalizing what Congress at that given moment believed should be punished."

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[15] July 1967 coincides with the tragic riots occurred at Newark and Detroit. The riots at Newark started after a cab driver was arrested and hauled, with unnecessary force, to a precinct station; at Detroit, after a "blind pig", an after hours drinking place, was raided by the police in the early hours of a summer day (Clark, 1970 p.167).

[16] There are no negative murders. The negative figures represent homicides falling below the trend line. According to my interpretation, it is the lack of internal and overseas social unrest that account for below-trend homicides.

[17] This rise in murder coincides, with what (Blumstein and Wallman 2000,p.170) called the heroin injection era in New York around 1968. During this period much of the pool of eventual drug users came from Puerto Rican and African American families who had migrated to New York before or during World War II. This is the longest rising cycle observed during the twentieth century.

3.3. *The fourth period:* 1981 -1993

Descending cycle 1982-1986. The victim's rights era.

Republican Ronald Reagan assumes the presidency in 1981. This declining period in my estimates (cyclical murder reducing from 9.6 in 1982 to 9.0 in 1986, fig. 4) coincides with the reduction in adult homicide observed from 1982 to 1986 (Blumstein and Wallman, 2000). Part of the explanation for the adult's contribution to the overall decline is relatively straightforward. As the huge baby-boom cohorts moved into adulthood, they brought down the total rate of homicide and other crimes. In 1984 Congress passes the Victims of Crime Act of 1984. If the legal focus of the 1960s was on defendant's rights, the focus of the 1980s and 1990s is on victim's rights.

Ascending cycle 1987-1993. Historical facts: the introduction of crack, the Persian Gulf War, the war on drugs in Colombia, the Rodney King riots in Los Angeles, and the first terrorist attack in NYC, the World Trade Center bombing.

In 1989, Republican George H.W. Bush assumes the presidency. Florida relaxes its law governing concealed weapons, setting off a string of similar laws in other states that permit citizens to carry concealed handguns. Murder is on the rise; a series of accidental shootings prompts Florida to enact a new law that requires adults to keep loaded guns away from children. Offenders face a $5,000 fine and five years in prison. This year also the U.S. military invades Panama, arresting Panama's leader Manuel Noriega, who officials allege is involve in international drug smuggling. The drug war in Colombia worsens from 1985 to 1991 to such a point that the U.S. and Colombian authorities kill Pablo Escobar in 1992.

In 1992, a year prior the end of this ascending cycle, the FBI successfully prosecutes New York's Gambino family crime boss John Gotti on 13 charges of murder, gambling racketeering, and tax fraud. Gotti had escaped three previous indictments since 1986 and had earned the nickname "Teflon Don".

According to Durham (1996, p.1) crimes of heinous nature dominate the national evening news around the country. By the end of 1992 citizens reported 14.4 million offenses to law enforcement agencies around the country, meaning more than 5 percent of Americans were victimized by crimes. Statistics also suggests that law enforcement agencies cannot keep up with the tide of crime. During this year only 21 percent of the offenses reported resulted in arrest. According to the Federal Bureau of Investigation's (FBI) Uniform Crime Reports, someone was murdered every 22 minutes, robbed every 47 seconds, and raped every 5 minutes.

Democrat, William Jefferson Clinton assumes the presidency in 1993. By the end of 1993 the rate of offenses remains high, 440.1 aggravated assaults occurred per 100,000 U.S. inhabitants – up from 298.5 per 100,000 in 1980 and 80.4 per 100,000 residents in 1993 (Durham 1996, p.3). My decomposition accurately shows that in 1992-1993 the country experienced the highest historical cyclical terrorist murder per capita peak

(passing from 5.22 per capita in 1992 to 5.33 in 1993, Fig.4). Also, 1992 coincides with the disruption in social order during the Rodney King riots in Los Angeles, where one writer has estimated that two of every three looters were drug or alcohol abusers, and 1993 with the Long Island train massacre, and The first World Trade Center bombing.

Blumstein and Wallman (2000, p.39) and Bumstein (1998) explains, this sharp rise in violence (1987-1993) as largely consistent in the rise phase with the introduction of crack recruitment of young minority males to sell the drugs in street markets; arming of the drug sellers with handguns for self-protection; diffusion of guns to peers; irresponsible and excessively casual use of guns by young people, leading to a "contagious" growth in homicide and possibly robbery. Cork (1999) provides some strong evidence supporting this connection. This period lasted until 1992, and stopped in 1993 as a consequence of the enacting of the "Crime Act" in 1994. Blumstein (1998) mentions, that the increase in the aggregate homicide rate was due to escalating rates among juveniles and youth, predominantly (although not exclusively) by and against black males, particularly in the larger cities and exclusively involving handguns (during, this upward cycle, my estimates jump, from 0.40 cyclical murder per capita to 5.32 per capita in 1993, Fig.4).

3.5. *The fifth period:* 1994 – to present.

Descending cycle 1994-1999. Historical facts: the enacting of the Crime Act and the terrorist attack on Oklahoma City.

Blumstein and Wallman (2000, p.39), clearly saw this well-defined subsequent decline in crime, and explained it in terms of a lag in the initiation of this process. They considered that since the large cities started first, the crack era and its consequences, now during this period this phenomenon dies in larger cities but moves to the smaller ones. They consider this, as the reason why, by 1998, the youth decline was still well above the stable rate, that prevailed for the fifteen years from 1970 through 1985.

This descending cycle 1994-1999 is marked with President's Clinton enacting of the Violent Crime and Law Enforcement Act of 1994 (the "Crime Act") stopping the upward trend in terrorist murder in 1993. From 1994 on, terrorist murder declines (passes from 5.32 per capita in 1993 to 4.81 per capita in 1994, fig.4).

On 19 April 1995, the terrorist attack of the Alfred P. Murrah Federal Building in Oklahoma, resulting in 168 deaths, occurs, according to my estimates two years after the end of the ascending cycle (1987-1993). Authorities arrest two suspects, Timothy McVeigh and Terry Nichols, who allegedly have connections with citizen militias that are angry over increased government intrusion into their lives, gun control laws, and the decision to invade the Branch Davidian compound in Waco, Texas.

In 1996, federal prosecutors targeted an inmate named Larry Hoover, who they alleged controls a 50,000-member cultish drug gang known as the "Ganster Disciples" from his prison cell in Dixon, Illinois. Prosecutors consider the gang has members in 35 states, approximately 5,000 of which are in prison. This year President Bill Clinton's

remarks on crime in the annual State of the Union Address states that the strategy of community policing is clearly working, pointing out how violent crime is coming down all across America. In New York City, murders are down 25 percent; in St. Louis, 18 percent; and in Seattle, 32 percent. Apparently the Crime Bill of 1994 was critical to the success of community policing, after providing funds for 100,000 new police in communities of all sizes. Additionally the Brady Bill has already stopped 44,000 people with criminal records from buying guns (Durham 1996, p.78). All these facts coincide with the murder drop which lasted up to 1999 (with a rate of 0.52 cyclical murder) according to my estimates.

From 1994 to 12 May 1999, The Crime Act awarded funds for hiring and redeploying 100,000 officers (Blumsteing and Wallman 2000, p.209). This legislation turned out to be the most comprehensive bill in history; it expanded the death penalty, imposed bans on many models of firearms and placed new restrictions on guns dealers, imposed mandatory life sentences without parole for federal offenders convicted of three serious felonies, allocated more than a billion dollars for border control, and established several grant programs designed to aid victims and promote crime prevention. During this period the country experienced a continued downward trend in terrorist murder lasting up to 1999 (e.g., with a rate of 0.52 terrorist murder per capita, fig. 4).

In spite of all this, today there is no reliable evidence to support the link between recent increases in the number of police officers and the drop either in murder or cyclical terrorist murder; additionally researchers face the problem of no causation: if deterrence is the right policy then increasing the number of police officers should produce a reduction in crime.

Ascending cycle 2000-2004. Historical facts: the third terrorist attack in NYC, 9/11 2001 terrorist attacks in New York. Attack on Afghanistan, Operation Iraqi Freedom.

On September 2001, two years after the end of this descending cycle, and apparently when the U.S., was unaware of the high probability of a domestic attack, the world was shocked by the infamous attacks of 9/11.

Cyclical terrorist murder and social tension in U.S. soil move upward from 2000 to 2004 (passing from a rate 0.69 terrorist murder per capita to 2.48). It appears that the upward trend will continue as long as the war in Iraq continues and as long as the U.S. forces gain confidence. According to my estimates and theory, additional attacks can occur at the end or close to the end of this upswing cycle. A model for terrorist attacks capable of forecasting the turning point appears as the next urgent research step.

4. Conclusions

Provided with a data series of per capita murder from 1900 to 2004, I have constructed the *cyclical terrorist murder and attacks indicator* for the United States. The estimated component strongly coincides with the accepted historical narrative of waves of organized crime, internal tensions, social unrest, breakdowns in social order, crime

legislation, political unrest overseas (as wars) and recently with the periodic terrorist murder and attacks in U.S. soil.

The cyclical terrorist indicator is very precise at pointing out the historical occurrence of terrorist murder and attacks on U.S. soil, as happening in the proximity of the turning points of whether and ascending or descending cycle (seven historical attacks and murder confirm so: the attack on Pearl Harbor on 1941, President Kennedy's assassination in 1963; Los Angeles riots and, the Black-out in New York City in 1965 (both occurring the year of a turning point), Newark and Detroit riots in 1967, Martin Luther King Jr's murder in 1968, the World Trade Center bombing (again happening exactly the year of a turning point - 1993), the Oklahoma bombing in 1995, and most recently, 9/11 2001 terrorist attacks).

My current research is actually headed towards the construction and estimation of a structural model to explain the movement of cyclical terrorist attacks on U.S. soil[18]. This is of great importance since it will permit real-time assessment of whether the country finds itself in a cyclical terrorist murder upswing or downswing. Immediate research should be done constructing the decomposition using the monthly data from 1900 to 2004; its results will confirm the research reported here and will point out the occurrence of terrorist attacks at the monthly level.

Acknowledgements.

Appendix A. The Beveridge-Nelson decomposition of time series applied to decomposing the U.S. per capita homicides from 1900 to 2004.

I denote the observations of a stationary series of the logarithm of per capita homicides for the U.S. by *Lthom* and its first differences by w_t. Following Beveridge– Nelson, BN for short, (1981, p.154), many economic times series require transformation to natural logs before the first differences exhibit stationarity, so the w_t's, then are continuous rates of change.

$$W_t = Lt\hom_t - Lt\hom_{t-1} \qquad\qquad (1)$$

If the w's are stationary in the sense of fluctuating around a zero mean with stable autocovariance structure, then the decomposition theorem due to Wold (1938) implies that w_t maybe expressed as

$$W_t = \mu + \lambda_0\varepsilon_t + \lambda_1\varepsilon_{t-1} + \ldots, \;\; where \;\lambda_0 \equiv 1 \qquad (2)$$

where, μ the $\lambda's$ are constants, and the $\varepsilon's$ are uncorrelated disturbances. According to BN, the expectation of $Lt\hom_{t+k}$ conditional on data for $Lt\hom$ through time t is denoted by $Lt\hat{\hom}(k)$, and is given by

$$
\begin{aligned}
Lt\hat{\hom}(k) &= E(Lt\hom_{t+k} \mid \ldots\ldots\ldots, Lt\hom_{t-1}, Lt\hom_t) \qquad (3)\\
&= Lt\hom_t + E(W_{t+1} + \ldots\ldots W_{t+k} \mid \ldots., W_{t+1}, W_t)\\
&= Lt\hom + \hat{W}_t(1) + \ldots\ldots + \hat{W}_t(k)
\end{aligned}
$$

Since the $Z_t's$ can be expressed as accumulations of the $w_t's$. Now from (2) it is easy to see that the forecasts of W_{t+i} at time t are

$$
\begin{aligned}
\hat{W}_t(i) &= \mu + \lambda_i\varepsilon_t + \lambda_{i+1}\varepsilon_{t-1} + \;\ldots\ldots \qquad (4)\\
&\quad \mu + \sum_{j=1}^{\infty}\lambda_j\;\varepsilon_{t+1-j},
\end{aligned}
$$

Now substituting (4) in (3), and gathering terms in each ε_t, I get

$$L\hat{\mathrm{hom}}_t(k) = L\mathrm{hom}_t + \hat{W}_t(i) \tag{5}$$

$$= L\mathrm{hom}_t + \left[\mu + \sum_{j=1}^{\infty} \lambda_j \varepsilon_{t+1-j} \right]$$

$$= k\mu + L\mathrm{hom}_t + \left(\sum_{1}^{k} \lambda_i \right)\varepsilon_t + \left(\sum_{2}^{k+1} \lambda_i \right)\varepsilon_{t-1} + \ldots$$

And considering long forecasts, I approximately have

$$L\hat{\mathrm{hom}}_t(k) \cong k\mu + L\mathrm{hom}_t + \left(\sum_{1}^{\infty} \lambda_i \right)\varepsilon_t + \left(\sum_{2}^{\infty} \lambda_i \right)\varepsilon_{t-1} + \ldots \tag{6}$$

According to (6), it is clearly seen that the forecasts of homicide in period (k) is asymptotic to a linear function with slope equal to μ (constant), and a level $L\mathrm{hom}_t$ (intercept or first value of the series).

Denoting this level by $\overline{L\mathrm{hom}_t}$ I have

$$\overline{L\mathrm{hom}_t} = L\mathrm{hom}_t + \left(\sum_{1}^{\infty} \lambda_i \right)\varepsilon_t + \left(\sum_{2}^{\infty} \lambda_i \right)\varepsilon_{t-1} + \ldots \tag{7}$$

The unknown μ and $\lambda's$ in Eq. (6) must be estimated. Beveridge and Nelson suggest and ARIMA procedure of order (p,1,q) with drift μ.

$$W_t = \mu + \frac{\left(1 - \theta_1 L^1 - \ldots - \theta_q L^q\right)}{\left(1 - \varphi_1 L^1 - \ldots - \phi_p L^p\right)} \varepsilon_t = \mu + \frac{\theta(L)}{\varphi(L)} \varepsilon_t \tag{8}$$

Cuddington and Winters (1987, p.22, Eq. 7) realized that in the steady state, i.e., L=1, Eq. (9) converts to

$$\overline{L\mathrm{hom}_t} - \overline{L\mathrm{hom}_{t-1}} = \mu + \frac{(1 - \theta_1 - \ldots \theta_q)}{(1 - \phi_1 - \ldots \varphi_p)} \varepsilon_t = \mu + \frac{\theta(1)}{\varphi(1)} \varepsilon_t \tag{9}$$

The next step requires replacing the parameters of the ARIMA model (Table 2) and iterating Eq.(9) recursively, i.e., replace t by (t-1), and (t-1) by (t-2), etc, I get

$$W_t = \overline{L\hom_t} - \overline{L\hom_{t-1}} = \mu + \frac{\theta(1)}{\phi(1)}\varepsilon_t \qquad (10)$$

$$W_{t-1} = \overline{L\hom_{t-1}} - \overline{L\hom_{t-2}} = \mu + \frac{\theta(1)}{\phi(1)}\varepsilon_{t-1}$$

:

$$W_1 = \overline{L\hom_1} = \overline{L\hom_0} + \mu + \frac{\theta(1)}{\phi(1)}\varepsilon_1 \quad (\textit{this is the value for year } 1923)$$

:

$$W_{82} = \overline{L\hom_{82}} = \overline{L\hom_0} + \mu + \frac{\theta(1)}{\phi(1)}\varepsilon_2 \quad (\textit{this is the value for year } 2004)$$

Adding these equations I obtain W_1 (the value for year 1923), and W_{82} (the value for year 2004), on the right hand side μ is added "t" times, and the fraction following μ is a constant multiplied by the sum of error terms. I obtain

$$\overline{L\hom_t} = \overline{L\hom_0} + \mu.t + \frac{\theta(1)}{\phi(1)}\sum_{i=1}^{t}\varepsilon_i \qquad (11)$$

This is, Newbold's (1990, 457, Eq.(6)), which is a differential equations that solves after replacing the initial value for $\overline{L\hom_0}$, which is the logarithm of per capita murder in year 1923.

Cárdenas (1991), suggests that Eq.(11), should be changed when the ARIMA model includes autoregressive components. Since the ARIMA developed for the U.S' case (Table 2), includes autoregressive, and moving average components, I formally show this now.

$$L\hom_t - L\hom_{t-1} = \mu + \sum_{i=1}^{p}\phi_i W_{t-i} + \sum_{j=1}^{q}\theta_j\varepsilon_{t-j} + \varepsilon_t \qquad (12)$$

$$\Delta L\hom_t = W_t = Lt\hom_t - Lt\hom_{t-1}$$

$$L\hom_t - L\hom_{t-1} = \mu + \sum_{i=1}^{p}\phi_i\Delta L\hom_{t-i} + \sum_{j=1}^{q}\theta_j\varepsilon_{t-j} + \varepsilon_t$$

Bringing the moving average components to the LHS, I get

$$L\hom_t - L\hom_{t-1} - \left(\sum_{i=1}^{p}\phi_i\Delta L\hom_{t-1}\right) = \mu + \sum_{i=1}^{q}\theta_j\varepsilon_{t-j} + \varepsilon_t \qquad (13)$$

Expanding summation terms

$$(1-\phi_1 L^1 - \phi_2 L^2 - \ldots - \phi_p L^p)(L\hom_t - L\hom_{t-1}) = \mu + (1 + \theta_1 L^1 + \ldots + \theta_q L^q)\varepsilon_t \quad (14)$$

Rearranging Eq. (14) and including the ARIMA parameters from Table 2, I get.

$$L\hom_t - L\hom_{t-1} = \frac{0.0098}{1+0.26+0.19+0.47-0.22-0.036} + \left(\frac{1+2.16+1.38+1.02}{1+0.26+0.19+0.47-0.22-0.036}\right)\varepsilon_t \quad (15)$$

Now, after recursively replacing, t with (t-1), and (t-1) with (t-2), etc, and after adding together "t" times, I have

$$L\hom_t - L\hom_0 = \frac{0.0098.t}{1+0.26+0.19+0.47-0.22-0.036} + \left(\frac{1+2.16+1.38+1.02}{1+0.26+0.19+0.47-0.22-0.036}\right)\sum_{i=1}^{t}\varepsilon_i \quad (16)$$

And rearranging,

$$L\hom_t = L\hom_0 + \frac{0.0098.t}{1+0.26+0.19+0.47-0.22-0.036} + \left(\frac{1+2.16+1.38+1.02}{1+0.26+0.19+0.47-0.22-0.036}\right)\sum_{i=1}^{t}\varepsilon_i \quad (17)$$

In the steady state, when L=1, Eq. (17) yields the permanent component of the per capita murder for the U.S., the last step requires taking the exponential to the LHS of Eq. 17, getting the level for the permanent component. The cyclical component is finally obtained by the difference of the level of the observed per capita murder minus the level of the permanent component of murder, and is shown in Fig.4.

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