

Economics of crime: Investigating the role of macroeconomic variables on the increase of occurrence crime in society

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ABSTRACT

Crime is a phenomenon that exists in all societies and affects the useful performance of different parts of a country. Various factors influence the occurrence of the undesirable phenomenon of crime, one of the most important of which is the economic factor. Applying incorrect policies can create income inequalities and social gap, provide the basis for all kinds of crimes and endanger social security. Therefore, the purpose of this research is to investigate the impact of macroeconomic variables on the increase in crime. In terms of methodology, this research is a correlational research. A standard questionnaire was used to measure the research variables. The questionnaire was distributed among 340 people sampled from the statistical population, all the criminals arrested during 8 months in Shiraz police stations. The descriptive research method was correlation type. In order to answer the questions and check the hypotheses of the research, Smart-PLS software was used to check structural equations and path analysis by Partial Least Squares (PLS) method. According to the results obtained from the path coefficient and t-statistics, relative deprivation and inflation have a significant effect on unemployment, class conflict, poverty and inequality, and through these variables lead to an increase in crime. Also, the results confirm the positive and significant impact of unemployment, class conflict, poverty and inequality on crime.

Keywords: crime, crime economy, macroeconomic variables.

I. INTRODUCTION

Crime is an issue that exists in all societies and has adverse effects on different parts of society. The spread of criminal activities in any society creates and increases serious socio-economic challenges in that society. Despite the same laws, the amount of crime is different in

different regions (Basimir et al., 2017). This issue can be due to two reasons: the difference in the implementation of the laws and the strictness of the law enforcers and the difference in the economic and cultural conditions and even the geography of different regions. One of the important and fundamental points of view in investigating the environmental conditions of crime is the economic characteristics of the environment, which has led to the formation of the crime economy (Bettencourt and Kenzeh, 2022). A significant part of the resources has been spent every year to detect crimes and arrest criminals at different levels. In addition to financial costs, these unproductive and harmful activities have occupied a large number of the society's workforce and prevented them from being used in the process of growth and development (Hartley et al., 2022).

Between economy and security, in other words, between economic growth and development and the occurrence of crimes, which are at the opposite point of security, we can see a mutual and close relationship, so that the formulation of a desirable and efficient strategy, sustainable growth and development, and national security require the relationship between economy and security. Neglecting the relationship between economy and security and not recognizing this relationship not only makes sustainable growth and development difficult, but also makes security face serious risks (Hejalmarson and Lingovich, 2019). Paying attention to the importance of the issue of crime in different countries, in recent years, extensive studies have been conducted to identify and explain the causes of its occurrence. The economic condition of society is undoubtedly one of the most important factors affecting the type and amount of crimes, and the effort to explain the relationship between factors, such as malnutrition, unsanitary housing, overcrowding and illegal activities, which

are the result of desperation along with the inability to overcome these conditions. It can be said that poverty directly or indirectly causes an increase in criminal activities (Bell et al., 2022).

Therefore, it is argued that in any society, the level of crime has a direct relationship with the level of poverty, and an increase in poverty leads to an increase in crime (Frimel et al., 2019). By increasing the price of goods and services, inflation lowers people's purchasing power and reduces their real income. This reduces people's ability to provide the necessary expenses to obtain satisfaction in providing health and hygiene. Also, inflationary pressure can lead to irresponsibility and thus cause social deviations (Lee et al., 2021). Examining the relationship between crime and unemployment indicates a direct relationship between these two factors; Unemployment is one of the problems in today's societies, especially in the third world societies, which is considered an effective social factor in the incidence of crime from the point of view of criminology. The increase in unemployment, especially among the young, destroys the cultural values of the society and in the long run, it causes all kinds of social damage that occurs both individually and socially in the sick person (Galiani et al., 2018).

A person who is suffering from social harm, on the one hand, feels humiliated and lost from the psychological point of view and becomes a debtor to the society, and on the other hand, because he considers the society responsible for his deprivation, a kind of feeling of revenge develops in him (Dostman and Landersan, 2021). In this way, his effort for poverty alleviation may have fallen into illegal and anti-social channels, leading to theft and crime, and along with this factor, the role of income in committing crime shows that at low income levels, the probability of committing crime increases; This is because the probability of arresting people with low income is very low. In other words, the feeling of these people is that not only their legal receipts are low; Moreover, the opportunity cost of time spent on criminal activities or being in prison is also low (Bholer et al., 2022).

Based on Baker's analysis, economic conditions such as unemployment, inflation, and poverty increase the rate of crime, because these factors increase the difference between crime and legal work. Ehrlich 2 considers the effects of unemployment on crime rates. He states that the unemployment rate can be considered as a complementary indicator of the income opportunities available in the legal labor market. Therefore, when the unemployment rate increases, people's access to legal income opportunities

decreases, they are encouraged to engage in criminal activities. Following Becker's model, Joquist 3 maximizes the expected utility function (for crime) with a time constraint by specifying a von Neumann-Morgenstron 4 utility function for individuals, and the results of poverty and economic inequality, unemployment and inflation are a positive relationship. And it has meaning with financial crimes like theft. Telis 5 investigated the effect of macroeconomic policies on crime and showed that monetary and financial policies are effective on crime. He pointed out that fiscal policies affect crime through government spending and monetary policies through inflation (Wildman and Anderson, 2017). In addition to the mentioned economic factors, social factors, such as: culture, society, gender, etc., also affect the commission of crime; However, the present article is only devoted to examining the economic factors affecting crime.

Therefore, in view of the fact that during the last few years in the country of Iran, the rate of economic inflation has increased sharply, the unemployment rate has risen alarmingly and the price of goods and services has become one of the biggest problems of Iranian individuals and families. It is appropriate that criminal activities should not be considered only as a concept of legal celibacy; Rather, in dealing with such crimes, the causes and economic factors of their commission should also be considered, which are actually the growth of liquidity, the increase of inflation, the price of goods and services, and the increasing unemployment. In this regard, this research seeks to answer the question of whether organizational resource planning has a significant effect on competitive advantage with the mediating role of dynamic marketing capabilities.

II. THEORETICAL FOUNDATIONS

The economic point of view is the approach of economists to crime through the lens of benefit-cost; For this reason, a person commits a crime when the cost is less than the benefits. Also, many other factors, such as: poverty, unemployment, inequality in income distribution, industrialization of cities and the phenomenon of urbanization are effective on the occurrence of crime. Without a doubt, poverty, economic inequalities, unemployment and inflation are among the most important problems of human society, which have a special place among other economic issues.

The problems of poverty, unemployment and inflation are not only limited to their consequences; Rather, the problems of these economic factors intensify when they become the

basis for deviations, and in fact, the mechanism of the economy's impact on society generally originates from the channel of poverty, unemployment, and inflation (Bazin and Mozayo, 2017). Bunqar1 (1916) states that economic factors are the basic factor for all social structures and have significant effects on individual activities, including crime; Especially if this economic interaction is the level of poverty, income inequality and economic opportunity costs. The occurrence of crime in society causes a waste of private and public sector resources in fighting and controlling crime, and by threatening economic and social security, it reduces production and investment incentives and ultimately leads to unemployment, inflation and poverty (Stevenson, 2017). In general, the theories explaining economic factors affecting crime are divided into two main categories. There are two main theories:

- the rational theory of crime
- the radical theory of the political economy of crime. Each theory refers to different factors that affect crime (Buler et al., 2017).

1- Rational theory of crime: Economics can be defined as a science that examines how to allocate scarce resources by means of supply and demand forces to respond to the various needs of society. Similarly, economists claim that crime is the result of an individual's choice between using scarce resources, time and effort in legitimate and illegitimate activities. A main assumption is that when making decisions, people are rational and choose the best option based on their information and resources. People know that they have to promote their interests by choosing rational options to provide them with the most benefit and the least cost (damage) (Bettencourt and Kenzeh, 2022). The theory of wise choice differentiates between static and dynamic models for explaining crime. In a static model, people compare the cost and benefit of committing crimes over a period of time. In a dynamic model, individuals consider multiple periods. Therefore, the dynamic model considers the effect of the time element, unlike the static model (Buler et al., 2017).

2- The radical theory of the political economy of crime: other economic models explaining crime focus on individual decisions based on the time factor between legal and illegal activities. The radical model of political economy focuses on the main political and economic-social factors that lead to crime. The main factors in this theory include: inflation, relative deprivation, poverty and inequality, unemployment and class. All these factors are interdependent (Bettencourt and Kenzeh, 2022).

2-1 -Inflation

Inflation worsens the relative situation of incomes of low income deciles and improves the situation of high income deciles. This is because the low income deciles are often salary earners with a fixed income who are not able to adjust their wages against inflation, and except for the minimum wage law that is revised every year by the government, they do not have the ability to maintain their purchasing power, and on the opposite side of these deciles are the rich. are, who often maintain their purchasing power against inflation due to investment in non-tradable assets or pricing power in goods and services, and are even able to increase their purchasing power and jump to higher levels of utility when conditions allow. (Varvarigos, 2020).

2-2 -Relative deprivation

The relative deprivation factor is concerned with various income differences among different classes of society. According to this view, people consider themselves to belong to the group in which they live. The degree of deprivation is the perceived difference between the value expectations (wants) and the value abilities (possessions) of people. In the neoclassical economy, people determined their chances of employment and income based on the level of education and the state of the free labor market. In the relative deprivation model, individuals perceive their fate as similar to their peers (Nickerson, 1983). Danziger and Wheeler (1975) and Danziger (1976) conducted studies on the relationship between the approach of relative deprivation and criminal activities (night burglary and robbery). The findings of this research indicate a positive relationship between income inequality and criminal behavior (Wildman and Anderson, 2017).

2-3 -Poverty and inequality

The difference in the level of poverty and welfare is the influencing factors in the variation of the crime rate. Supporters of the federal government's large social programs in the 1960s believe that improving poverty by improving people's living conditions and thereby reducing participation in criminal activities will eventually lead to a reduction in crime (Lee et al., 2021). To investigate the relationship between inequality and crime, the income differences of rich and poor people can be used when measuring the amount of crime in different cities (Fleisher 1, 1976).

Although Nickerson (1983) claims that this approach is based on evidence that most crimes occur in poor communities and the poor are the

majority; compared to rich people; They sacrifice themselves (Bholer et al., 2022). These crimes may be explained by the lower costs associated with committing a crime in a familiar territory. Gordon (1973) claims that capitalism and the inequality related to it cause an increase in crime. In Gordon's point of view, criminal behavior is a part of the structure of capitalist societies and socio-economic contradictions are a result of this structure. In general, crime is the consequence of the efforts of the poor to create a better presence for the happy (Lee et al., 2021).

2-4 -Unemployment

Different models examine different relationships between unemployment and crime. Some economic models reduce both the cost of committing crime and the need for additional income from other sources; Compared to legal work, it increases. Radical theories predict that unemployment leads to an increase in poverty. Then the resulting deprivation reduces the costs of criminal activities and punishment. This indirect result leads to the increase of contradictions. People's expectations of their potential earnings in the labor market can affect their crime-committing contexts. In general, if there is a significant gap between what people believe is accessible (the group experience) and what is not accessible (the experience of the larger community), people perceive this gap as relative deprivation.

Therefore, the opportunity cost of crime appears to be minimal due to returning to legal employment. Thornberry and Christensen³ (1984) used data from a longitudinal study in Philadelphia⁴ and found that unemployment had significant effects on involvement in criminal acts. They realized that the amount of crime; especially financial crimes; In the period of high unemployment, it is a lot. The results of other studies (Levitt⁵, 1996, Witt⁶ et al., 1999) also indicate a positive relationship between unemployment and crime (Hejalmarson and Lingovich, 2019).

5-2 -Class conflict

Attempts to relate criminal activities to the specific idea of class conflict often go back to the analyzes of Marxism. Using the law is a systematic assumption of discrimination against the poor classes. Taylor et al. (1975) predicted that deviant

behavior may be a reaction to the challenges of life in a conflicted society. class conflict in paying attention to crimes; such as night theft and robbery; And it is revealed in comparison with white collar crimes. In white-collar crimes, more financial resources are stolen compared to crimes such as night-time theft (Simon and White, 1982).

Gordon (1973) states that white collar crimes are generally committed by people from the wealthy to the poor. Old crimes like theft tend to be non-violent because they are committed secretly. Newer crimes, such as white-collar crimes, often require direct confrontation or intimidation, and sometimes require silencing the victim to escape arrest. Gordon also states that people who live in minorities will never find the opportunity to embezzle from the bank or increase the capital of several million dollars by fraud (Varvarigos, 2020).

6-2 -Conceptual model

In general, in a brief summary of the theoretical bases, it can be stated that the economic theories explaining the crime are divided into two categories: micro-level theories and macro-level theories. The rational theory of crime, which focuses more on people's decision-making to commit criminal acts, is one of the micro-level theories. The radical theory of political economy, which focuses on the effect of economic structures on the amount of crime, belongs to macro-level theories.

All research studies are based on a conceptual framework, which defines the desired variables and the relationships between them. This conceptual framework is a model based on which the researcher theorizes about the relationships between the factors that have been identified as important in creating the problem. This theory may not necessarily be the researcher's words and logically derived from the results of previous research on the issue. Since every field and survey research requires a mental map and a conceptual model that is drawn in the form of a suitable analytical tool, variables and relationships between them, on this basis, the theory is conceptually shown in Figure 1 with 11 testable hypotheses. Is visible.

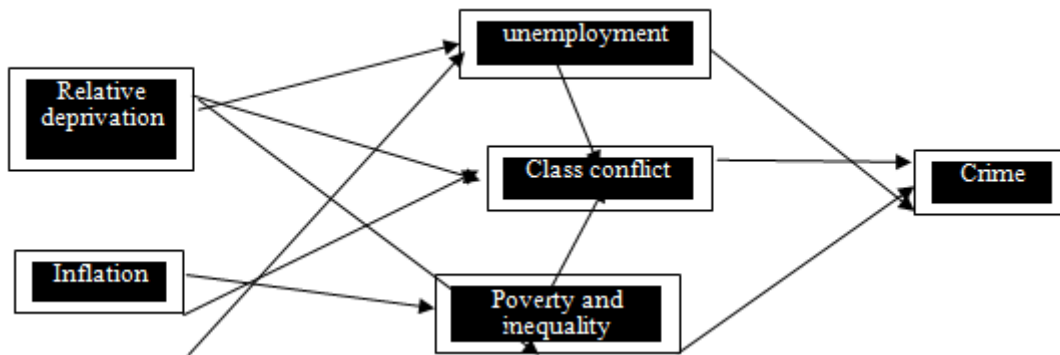


Figure 1: Conceptual model of the research

III. RESEARCH METHODOLOGY

In terms of methodology, this research is a correlational research. Based on how to obtain the required data and in terms of classification of research according to their purpose, the current research is in the category of descriptive research. This research is applied in terms of type and in terms of descriptive-survey method. In this research, in order to compile the basics, definitions and theoretical concepts, library resources including Brasnad, books and existing scientific articles were used. Also, a standard questionnaire was used to collect the data needed to test the research hypotheses. The questionnaire of this research was subjected to the judgment of several experts and professors of law and economics working in universities for the validity of the content and after making some corrections and obtaining approval from those professors in order to be more confident and acceptability of its face validity. About 30 questionnaires were distributed to the statistical population, and at first, the respondents could not understand some of the questions, and after several times of smooth translation of the text and removal of some questions, the questionnaire had sufficient face validity, and finally, the questionnaire was agreed upon as Data collection tools were used. The statistical population of this research was all the criminals arrested during 8 months from the beginning of 2022 to November of 2022 in the police stations of Shiraz city, whose number was about 3000 people. In this research, a simple random sampling method was used to select the samples and the research questionnaire was randomly distributed among the arrested criminals. Considering that the size of the statistical population is limited and equal to 3000 people, Cochran's formula was used to select the sample size. Therefore, the number of samples examined in this research is equal to 340 people.

IV. ANALYSIS

In this research, structural equation modeling with the help of partial least squares method and PLS software was used to test the hypotheses and accuracy of the model. PLS is a variance-based approach that requires fewer conditions compared to similar structural equation techniques such as Lisrel and Amos (Lejander et al., 2009). Its main advantage is that this type of modeling requires a smaller number of samples than Lisrel (Wixom and Watson, 2001). It is also proposed as a powerful method in situations where the number of samples and measurement items is limited and the distribution of variables can be uncertain (Hayer et al., 2010).

PLS modeling is done in two stages. In the first step, the measurement model should be examined through validity and reliability analyzes and confirmatory factor analysis, and in the second step, the structural model should be examined by estimating the path between the variables and determining the fit indices of the model (Holland, 1999).

4-1 -First step: measurement model

The measurement model test is related to checking the validity and reliability of the measurement tools.

4-1-1 -Narrative

AVE (Average Variance Extracted) and CR (Composite Reliability) criteria were used to evaluate the convergent validity, and the results of this criterion for the dimensions of the six research variables are shown in Table No. (1). Composite reliability higher than 0.7 and average variance higher than 0.5 are two necessary conditions for convergent validity and correlation of constructs (Ching Lin and Chi Huang, 2009). As it is clear from table number (1), all the composite reliability values are higher than 0.7 and the average variance values are higher than 0.5, and this confirms that

the convergent validity of the present questionnaire is acceptable. Is.

Table 1: The results of the extracted average variance of the research constructs

Variable Criterion	Relative deprivation	Inflation	unemployment	unemployment	Poverty and inequality	Crime
AVE	0/561	0/735	0/582	0/623	0/624	0/714
CR	0/888	0/809	0/909	0/846	0/845	0/875

In the divergent validity part, the amount of difference between the indicators of one structure is compared with the indicators of other structures in the model. This work is calculated by comparing the AVE root of each structure with the values of correlation coefficients between the structures. For this purpose, a matrix should be formed, where the values of the main diameter are the root matrix of the AVE coefficients of each

structure, and the lower values of the main diameter are the correlation coefficients between each structure and other structures. This matrix is shown in table number (2). As it is clear from table number (2), the square root of AVE of each construct is greater than the correlation coefficients of that construct with other constructs, which indicates the acceptability of constructs' divergent validity.

	Relative deprivation	Inflation	unemployment	Class conflict	Poverty and inequality	Crime
Relative deprivation	0/749					
Inflation	0/661	0/857				
unemployment	0/651	0/740	0/763			
Class conflict	0/257	0/324	0/432	0/795		
Poverty and inequality	0/458	0/341	0/458	0/458	0/790	
Crime	0/421	0/514	0/328	0/287	0/318	0/845

Table 2: AVE square root comparison matrix with correlation coefficients of constructs (divergent validity)

4-1-2 -Reliability

To check the reliability of the questionnaire, in addition to the Cronbach's alpha coefficient, which is presented in Table No. 3 and confirms the appropriate reliability of the questionnaire, the PLS method was also used. In the PLS method, index reliability is used (Rivard and Hoff, 1988).

The reliability of the index is also calculated by measuring the factor loadings

through the calculation of the correlation value of the indices of a structure with that structure. This case is an acceptable measurement model. But if the value of the factor load between a question and the corresponding dimension becomes less than 0.4, that question can be removed from the model and subsequent analyses. As can be seen in figure number (2), all values of factor loadings between structures are greater than 0.4, which shows a high correlation.

Table 3: Cronbach's alpha coefficient

Research structures	Relative deprivation	Inflation	unemployment	Class conflict	Poverty and inequality	Crime
Cronbach's alpha coefficients	0/871	0/822	0/740	0/887	0/846	0/892

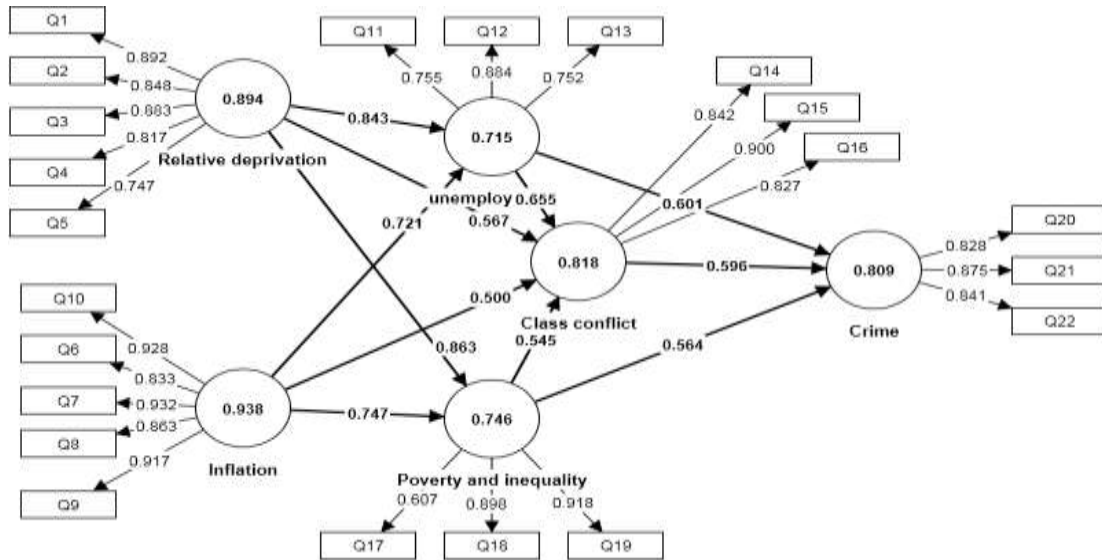


Figure 2: Output of the software - tested research model (path coefficients and factor loadings).

4-2 -The second stage: structural model and hypothesis testing

The test of the structural model, which is related to the test of research hypotheses and the effect of hidden variables on each other. To verify the hypotheses of the research, the bootstrapping command of Smart PLS software was used, which

shows the output of the t coefficients (Figure 3). When the t values in the range are greater than +1.96 and less than -1.96, it indicates the significance of the relevant parameter and subsequently the research hypotheses are confirmed.

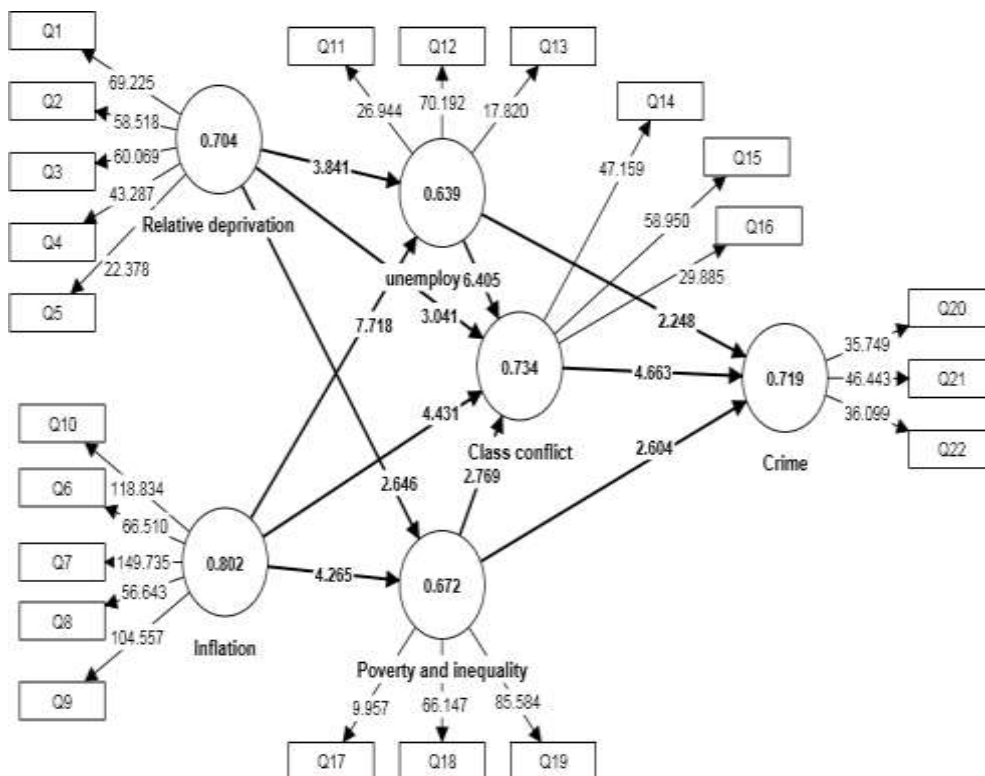


Figure 3: software output - bt coefficients

3-4 -Evaluation methods of formative measurement models

One of the ways to evaluate shaping models is the coefficient of determination (R²). The coefficient of determination (R²) examines how many percent of the variance of a dependent variable is explained by the independent variable(s). Therefore, it is natural that this value is equal to zero for the independent variable and is greater than zero for the dependent variable. The higher this amount is, the greater the influence of independent variables on dependent variables.

According to the coefficient of determination of the model, it can be said that the intentional variables including relative deprivation, inflation, unemployment, class conflict and poverty and inequality have been able to explain 0.809 of the variance of the crime variable; The researchers have introduced three values of 0.19, 0.33 and 0.67 as criteria values for weak, medium and strong values of R². Based on this, it can be concluded that the model has a high predictability, the remaining value is related to the prediction error and can include other factors affecting crime.

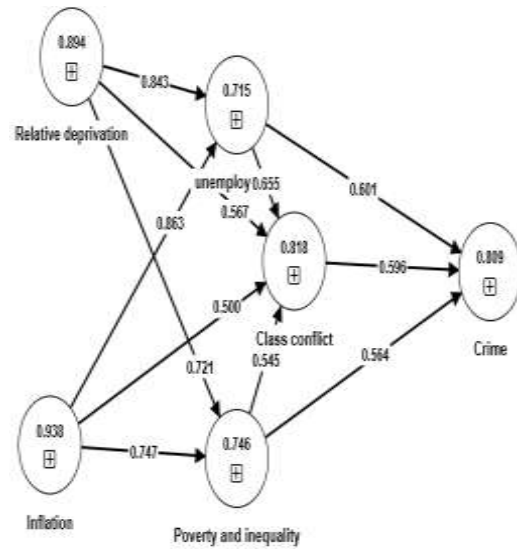


Figure 5: Evaluation of formative assay models

4-4 -Response to research assumptions

According to the results obtained from the path coefficient and t-statistics, relative deprivation and inflation have a significant effect on unemployment, class conflict, poverty and inequality, and through these variables lead to an increase in crime. Also, the results confirm the positive and significant impact of unemployment, class conflict, poverty and inequality on crime.

Table 4: direct effects, t-statistics and the results of research hypotheses

Rejecting or not rejecting	meaningful	statistic t	Standardized path coefficient β	theories
non-rejection	Sig<0.002	3/841	0/843	Relative deprivation → unemployment
non-rejection	Sig<0.000	3/041	0/567	Relative deprivation → Class conflict
non-rejection	Sig<0.000	2/646	0/862	Relative deprivation → Poverty and inequality
non-rejection	Sig<0.005	7/718	0/721	Inflation → unemployment
non-rejection	Sig<0.001	4/431	0/500	Inflation → Class conflict
non-rejection	Sig<0.000	4/265	0/747	Inflation → Poverty and inequality
non-rejection	Sig<0.000	6/405	0/655	Unemployment → Class conflict
non-rejection	Sig<0.000	2/769	0/746	Poverty and inequality → Class conflict
non-rejection	Sig<0.000	2/248	0/601	Unemployment → Crime
non-rejection	Sig<0.01	2/604	0/564	Poverty and inequality → Crime
non-	Sig<0.02	4/663	0/596	Class conflict → Crime

rejection				
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V. CONCLUSIONS AND SUGGESTIONS

This study was conducted in order to investigate the impact of macroeconomic variables such as relative deprivation, inflation, unemployment, class conflict and poverty and inequality on the crime rate. Crime can be examined from different perspectives, such as sociology, psychology, law, economics, and even biology. From the 1970s onwards, with Gary Baker's analysis, crime analysis received serious attention from economists. For a long time, the subject of crime and its relationship with economic conditions has been the focus of criminologists. In fact, the growing trend of crime in societies, considering its harmful consequences; Especially from a social point of view, it has become a necessity to study the factors affecting crime. According to the available statistics in the field of crimes, the amount of crime has also increased during the past years. Therefore, investigating and identifying the factors that cause crime to prevent its growth should be considered. Since economic factors are one of the factors in the occurrence of crime, this study used economic approaches to identify the economic components that affect crime in Iran. The results of this study showed that:

-According to the results of the research, relative deprivation has a significant effect on unemployment, poverty, inequality and class distance, and through the increase of these variables, it leads to an increase in crime. Relative deprivation occurs when there is an obstacle in the way of people achieving their goals and desires. And people who live in deprived areas and the facilities of other areas are deprived, unemployment and poverty will definitely increase and the feeling of class distance with the areas with facilities will be created in people, which can lead to an increase in crime.

❖ As the results show, inflation is an important factor in the occurrence of crime in the country, and inflation causes an increase in poverty and unemployment and the class gap between the rich and the poor, because in the conditions of inflation, the real income of the people in the society decreases and the amount received is proportional to the growth of the level. There were no public prices in the society. In addition, the feeling of relative deprivation of the people of the society is more prominent and parallel to it, their happiness and mental well-being is fading, which ultimately causes the class gap to increase and this itself causes the crime in the country to

increase. In order to reduce the effect of inflation on crime, it is recommended to correct inflation in the country.

- ❖ Unemployment can be due to not having enough jobs, not having the necessary skills, not having enough education, using technology instead of manpower, or even being traditional in doing work. And having a background to commit a crime can be an incentive for people to break the law. Therefore, it is recommended that in order to reduce the crime rate, the government should use appropriate policies such as providing necessary education and culture among families, creating jobs for low-educated, low-skilled and low-income people who do not need a lot of capital, and also providing the conditions Work for criminals who commit crimes again after being released due to unemployment provided grounds for reducing the unemployment rate.
- ❖ According to the results of the research, poverty and inequality have an effect on the increase in crime. In this way, the poorer the person is, due to his material needs and also to compensate for his inequalities, he tries in different ways, including engaging in crime.
- ❖ The class gap in society and the increase of this gap between rich and poor people will lead to an increase in crime. Rich people try to commit large-scale crimes, and poor people commit theft and petty crimes because they feel that they have been wronged.

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