Global Financial Crisis from the Institutional Economics Perspective

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Abstract

This study, which aims to determine the institutional dynamics of the 2008 Global Financial Crisis, uses panel data set of OECD countries between the years 1980-2018. The main motivation of this study is to reveal the causes of this great crisis, which deeply affects the whole world, from a different perspective and to develop policy recommendations to prevent similar economic crises in the future. The logit model was used because of its compatibility with the structure of the variables and some of the advantages it provides. Annual change in industrial production, short-term interest rates, annual change in the ratio of public sector debt to GDP, financial institutions development level and financial markets development level, government efficiency are the variables that contribute this crisis more. It seems that government debt and development level of financial institutions are the most important causes of the crisis. Economic freedom does not seem as effective in creation of the crisis. House prices and real exchange rate are the side results of the crisis rather than the causes. Simultaneous estimation of the relations among broad set of financial and macroeconomic variables and crisis by logit model gave clues about how to manage crises, perhaps not how to prevent them.

Key words

financial crises, institutional economics, logit model.

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Introduction

The concept of crisis refers to unexpected shocks that occur outside of routine in many disciplines and disrupt the functioning of the system. There is a similar situation from an economic point of view. Although there are several leading indicators, crises often occur at unexpected times and in unexpected ways. Uncertainty is one of the main features of a crisis. In economic terms, crises, problems in financial markets and most of the time, these problems appear as the effects of the real economy, that is, production and consumption. The instability in the exchange rate and the subsequent collapse of the national currency, domestic and foreign debt, the collapse of asset bubbles, and many other reasons can be effective alone or together in the context of crises such as hyperinflation. Generally, these malfunctions in the financial system result in real problems such as contraction in production, high unemployment and failure to meet consumption needs.

An economic crisis is an unplanned and undesirable process that threatens or totally disables an economy's potential for development. According to the economic sciences, an economic crisis is a time when a nation's economy is developing significantly negatively. Together with this definition, the term "economic crisis" also refers to the presence of negative trends in the primary macroeconomic indicators (capital flows, exports, GDP growth rate, employment rate, and prices, among others) (Hadziahmetovic et al. 2018).

Academics have long occupied the thought world of financial crises. Pioneering studies on this subject have generally focused on the problems experienced in developing countries, which are mainly caused by political failure and inadequate institutional structure (Krugman, 1979; Mishkin, 1990; Mishkin, 2001; Goldstein & Turner, 1996; Kaminsky & Reinhart, 1999).

Despite numerous studies in the area of crisis, it does not seem possible to say that economics has achieved absolute success in preventing the emergence of crises or at least mitigating their possible effects. The self-equilibrium approach put forward by mainstream economics (what is taught in most colleges and universities and is published in most journals) is funded by the most significant research foundation, known as mainstream economics (Dequech, 2007). This suggests a concentration on the US globally. The time frame under examination spans approximately from the late 1970s to at least 2008. Here, institutions are defined as socially accepted sets of norms for conduct or thought, including shared mental models (Dequech, 2017), with a liberal perspective based on a free enterprise constituting a set for regulatory policies and practices to be put forward in this regard. Nevertheless, after every crisis, actions are taken to use the political power of the public and to reorganize the system. In this context, the importance of institutions in the economic situation of countries and citizens is being questioned again in every crisis period. In light of this fact, paying attention to the discourses of alternative economic movements is of great importance in terms of advancing the science of economics, particularly regarding crisis issues. Institutional economics has an important place in terms of creating an alternative to mainstream economics with its comprehensive and dynamic perspective on economic facts. The cultural phenomena and formal-informal patterns that underlie society and human behavior offer logical and effective answers to clarify the sources of many economic problems. When the subject is evaluated for economics, it would not be wrong to say that a similar situation is also valid for economic crises.

Due to the effects of national investment relationships and the integration of the global financial system, the collapse of financial markets—which began in 2007 with financial instability and bankruptcies in the United States and the United Kingdom—was felt abruptly over a large geographic area.

Apart from the advancements in science and technology during the final quarter of the 1900s, the crisis unintentionally halted the long-term moderate growth trajectory. A significant weakening of the US banking sector was noted with the last financial crisis, which resulted from the appearance of an asset bubble in the housing market. Bankruptcies also occurred during this period.

In reaction to unfavourable circumstances following the severe economic downturn, banks raised credit requirements and standards to heights that were previously unheard-of heights. Put differently, even though there were incentives to loosen credit restrictions, financial institutions adopted a restrictive stance toward their operations following the crisis as a result of market uncertainty and pessimism. In other words, it had a significant impact on the real economy by disabling the financial transmission mechanism and disrupting economic activity. The reason for this disruption in financial markets is the inability to supply the cash flow that the economy requires to continue operating. Due to the influence of national banks that hold funds that are traded on foreign exchanges and are referred to as toxic, it has spread to numerous countries despite the lack of common financial issues or asset bubbles. With international trade suffering great damage from these disruptions, a period of global recession has entered. The main motivation of this study is to reveal the causes of this great crisis, which deeply affects the whole world, from a different perspective and to develop policy recommendations to prevent similar economic crises in the future.

In the second section of the study, a literature review is given. The third section covers the theoretical background of the crisis. The methodology is presented in the fourth section. The fifth section consists of the empirical results, while the last section contains conclusions and economic policy implications.

1. Literature review

The scholarly community has long been preoccupied with financial crises. Early research on this topic typically focused on the issues that developing countries face, which are mostly caused by weak institutional frameworks and political failure (Krugman, 1979; Mishkin, 1990; Mishkin, 2001; Goldstein & Turner, 1996; Kaminsky & Reinhart, 1999).

The crisis literature initially focused on the idea that weak economic fundamentals, such as overly expansionary monetary and fiscal policies, were the root cause of crises. However, subsequent crises and the models created in this context have demonstrated that crises can occur even in the absence of major modifications to the underlying policy framework (Insel & Kayıkçı, 2013; Kaminsky et al., 1998). In the United States of America (USA), the last financial crisis, which started with the collapse of the banking sector in 2007 and reached a global dimension in 2008, once again revealed the inadequacy of weak economic fundamentals and weak financial market judgement as a starting point.

Estrella and Mishkin (1996) sought clues for possible future situations by taking into account recessions and crises in the past and concluded that the slopes of the yield curve and stock prices are useful leading indicators. Demirgüç-Kunt and Detragiache (1998) focused on the commonalities between developing and developed countries regarding banking crises and concluded that the weak macroeconomic environment increased the crisis tendency, and high inflation and variable nominal interest rates boosted the risks in the banking sector and made maturity transformation difficult. He also emphasized that the existence of explicit deposit insurance increased systemic banking problems. Kaminsky and Reinhart (1999) focused on the macroeconomic background and causal relationship between the balance of payments and banking crises and concluded that these crises resulted from

weak economic foundations. Weak economic growth, worsening trade conditions, overvaluation of exchange rates and rising credit costs play important roles in the emergence of crises. Following the liberalization of financial markets, banking and currency crises became integrated.

Aka (2006), based on the effect of time on crisis probability, aimed to reveal the probable duration of financial stability and the determinants of this period and concluded that the probability of banking crises occurring approximately every 10 years is high. Bussiere and Fratzscher (2006) drew attention to the distinction between the time of crisis and the aftermath in the early warning system they developed for the prediction of financial crises, and they found that ignoring this distinction would lead to a significant deviation in the forecasting models and therefore weaken the ability of the models to predict financial crises.

Reinhart and Rogoff (2008) highlighted the risks associated with the growing proportion of unregulated or partially regulated financial assets in the financial system as well as the ongoing technological transformation by drawing comparisons between the financial issues that began in the USA in 2007 and previous crises in terms of asset prices, real economic growth, and public debt. The global M1 money supply deficit and the global private credit deficit are the best early warning indicators, according to Alessi and Detken (2009), who developed an early warning system by identifying the leading indicators of crises. They claimed that this is because asset price cycles are primarily global phenomena. Based on the idea that the type of economy and the structure of the banking system influence the likelihood of crises, Barrell et al. (2010) created an early warning system using data from the banking sector. The findings indicate that a high capital adequacy and liquidity ratio in the banking industry helps to lower the likelihood of a crisis.

Baier et al. (2012) focused on the impact of economic freedom on banking crises and revealed the existence of an inverse relationship between the two. The content of the concept of freedom is also important. Restrictions such as the protection of property, prevention of actions that eliminate competition and ensuring the reliability of contracts appear to necessitate freedom. Babecký et al. (2012) carried out an analysis to determine the indicators that will enable the early detection of risks in developed economies and the explanation of economic developments after crises. Chenguel (2014) observed the spillover effect of the crisis that started with payment problems in subprime mortgages in the USA in 2007, and as a result, he determined that the crisis that emerged in American financial markets followed a path first to developed countries and then to developing countries.

Majerová and Pražák (2020) sought to determine how the financial crisis and other structural economic changes affected the prosperity of these advanced economies. Regression analysis was performed to determine whether these indicators were dependent on one another, and observations were made between 2005 and 2016. The linear regression equation makes it clear that, in contrast to the money supply, which has a predominantly positive effect on equity returns, the unemployment rate, exchange rate, and interest rate have a predominantly negative effect. The global financial crisis at the close of 2008 had a negative effect on the ability of the selected linear regression analysis to predict outcomes over the long term in both countries, as confirmed by the Chow test. Abo Saeid (2013) outlined a few issues pertaining to the European financial crisis and how it affected the Arab Spring. The first thesis states that the European financial crisis has spread beyond Europe's borders and now has global implications. Since Europe is the primary trading partner of the Arab world, the economic weakness and decline in demand in Europe have a detrimental effect on the economies of the Arab world. Additionally, the article offered some suggestions for overcoming the effects of the crisis.

In their study, Laina et al. (2015) concentrated on European nations with the goal of determining the leading indicators of banking crises within the context of a more uniform data set. The results show that the most effective leading indicators are increases in the loan/deposit ratio and housing prices. Other helpful leading indicators include growth in mortgaged housing loans, increases in household and private sector debt, and trend deviation. A theoretical analysis of the creation of a traceable macroeconomic model in relation to asset bubbles, banking crises, and the welfare effect was provided by Miao and Wang (2015). In this situation, loss of confidence and shifting expectations are significant factors, even though fundamental shocks have the potential to trigger a financial crisis. By concentrating on the nonlinear relationships between the housing market and the real economy, Huang and Chiang (2017) attempted to identify the presence of a housing bubble and proposed that an effective early warning system could lessen the amount of wealth lost in the event of a collapse. In their analysis, Pedro, Ramalho, and da Silva (2018) found that low GDP growth is the primary cause of banking crises in addition to high bank debt and that bank-based financial systems exhibit greater resilience to crises. From 2004 to 2020, the probability of default for 30 financial institutions from the United States and the European Union (EU) was estimated by Anton et al. (2022). They stated that while default risk increased during the COVID-19 pandemic, it decreased significantly from the time leading up to the 2008 financial crisis.

Since the Great Depression, a great deal of analysis has been performed on the 2008 crisis, which was the second largest global crisis in terms of duration, extent of devastation, and impact area. These explanations, which sometimes overlap with each other, sometimes complement each other, and sometimes contradict each other, are almost a reflection of the assumption frequently emphasized by institutional economists that every researcher is influenced by the environment and world of thought in which the researcher expresses his or her own opinion. Although there are many studies of dominant economic thought systems and schools in the literature examining crises, there is a lack of studies that empirically examine crises from the perspective of institutional economics. This study was designed to fill this gap in the literature. Through this study, not only will studies examining economic crises in the institutional economics literature gain innovation in incorporating empirical features but also, due to the large number of variables and long-term analysis used, the causes of the crisis will be better revealed, and serious policy recommendations will be made to prevent similar crises that are likely to occur in the future.

According to Pan et al. (2023), there is disagreement over whether the European Semester (ES), which was put into place in the wake of the 2007–2008 global financial crisis, was based on a path-dependent or path-changing mechanism for multilateral surveillance and policy coordination. It accomplishes this by laying the theoretical groundwork for historical institutionalism.

Nijkamp et al. (2024) investigated how institutional arrangements might have affected the postcrisis recovery of the economically disadvantaged regions of the European Union in 2008 and how they might have strengthened adaptive mechanisms and encouraged intelligent specialization. Using a combination of econometric techniques, their multidisciplinary study highlights institutional and clever specialization aspects in the core-periphery differentiation of the European Union.

The global financial crisis, austerity, stagnant productivity, wage stagnation, rising inequality, inflation, and environmental and climate breakdown are just a few of the economic crises that have emerged since 2008, according to Jacobs (2024). These crises have proven challenging for mainstream economic theory and policy to address and, in some cases, have made things worse. The primary

reason for this failure is the "ontological individualism" that underpins neoclassical economic theory. According to his "institutional pluralist" view, his paper offers five different types of institutions for different economic domains. This study argues that institutional design should be the basis for economic policy and offers some model recommendations for key policy areas such as corporate investment and climate change.

Jiménez-Rodríguez and Prats (2023) analysed thirteen papers covering a range of important subjects in international finance and economics. The chosen papers provide an intriguing and illuminating collection of data for researching contemporary issues in international economics and finance, particularly in light of the COVID-19 pandemic, the aftermath of the 2008 financial crisis, climate change, and the instability following the invasion of Ukraine in 2022. The papers examine, from various angles, how certain events that have had a significant impact on the global economy's evolution have changed the rules governing international trade, foreign direct investment, and monetary, fiscal, and sectoral policy.

This study aims to determine the institutional dynamics of the 2008 Global Financial Crisis and includes a panel data set of Organization for Economic Cooperation and Development (OECD) countries between 2000 and 2018. This study differs from existing studies in the literature in many aspects and makes various contributions to the literature in this sense. This paper diverges from the current literature with simultaneous estimation of the relationships among a broad set of financial and macroeconomic variables and crises, whereas others generally use several economic or financial variables. In addition, a data set covering the years 1980-2018 will be used to make comparisons with the past years. In this way, this study provides the advantage of better determining the starting point of the crisis and determining where the system begins to deteriorate. Furthermore, even though many studies have examined the crisis, studies about the role of institutions in the literature are scarce. This study not only presents the perspective of institutional economics on crises but also conducts an empirical analysis that is rare in institutional economics. Moreover, generally, no attention has been given to governance, which is very important for financial crises.

2. Methodology

The 2008 crisis rendered many predictions about the health of the economy and the systems intended to identify financial disruptions invalid, forcing us to update our understanding of the structure of the economy. Notably, the crisis originated in developed nations, whose financial systems are regarded as robust and efficient, and it proceeded to spread to developing nations after first reaching developed nations (Chenguel, 2014). In this analysis part of the study, with the help of variables related to institutional elements, the aim is to clarify the aspects of the 2008 crisis that resemble and differentiate it from previous crises.

2.1 Data and Variables

This study, which aims to determine the institutional dynamics of the 2008 Global Financial Crisis, will be carried out on a panel data set of OECD countries between 2000 and 2018. In addition, a data set covering the years 1980-2018 will be used to make comparisons with the past. Panel data have been preferred for analysis because of their advantages, such as allowing more accurate inference of model parameters with their multidimensional structure, having more capacity than a single cross-section or time series of data to capture the complexity of human behavior, and simplifying calculations and

statistical inference (Hsiao, 2007). Since some of the variables included in the model are indices published annually, annual data were used in the analysis.

The 2008 crisis emerged as a crisis in developed countries as its starting point, and as of 2007-2008, 20 of the 24 countries experiencing financial crises were OECD countries. On the other hand, 16 OECD countries did not experience a financial crisis during this period. Considering the countries that did not experience a crisis in this period, a significant proportion of them were affected by the South American and East Asian crises during the 1990s (Laeven and Valencia, 2018). This situation indicates the positive effect of regulations on the financial markets of countries that have recently experienced crises. In addition, it is striking that countries with spatial or socioeconomic characteristics followed a similar path during the crisis period.

In this analysis of the institutional foundations of the 2008 crisis, a total of 25 variables, one dependent variable and 24 independent variables, were used (Table 1). The variables taken into account have often been tested as determinants of crises in the previous analyses put forward in this area. In this study, in addition to determining the similarities and differences with the past by analysing the 2008 crisis in particular, the effect of institutional structures will be revealed.

Table 1. Variables

Variable Name	Variable Definition	Source of Variable
BANK_CRISES	Crisis Dummy Variable (Crisis or Not)	Laeven and Valencia (2018)
REAL_HOUSE_PRICE	Change in Real House Prices	OECD Database, Reidin Real Estate Index (For Turkey)
CON_PRICE	Change in Consumer Prices	OECD Database
SHARE_PRICE	Change in Stock Prices	OECD Database, Trading Economics Database (For Lithuania)
UNEMP_RATE	Change in Unemployment Rate	IMF Database
GDP_PC_CHANGE	Change in GDP Per Capita (by purchasing power parity)	OECD Database
CUR_BAL_GDP	Current Account Balance to GDP Ratio	OECD Database, Trading Economics Database (For Belgium, Ireland, Luxembourg and New Zealand)
INDS_PRO	Change in Industrial Production	OECD Database
SHORT_INT_RATE	Short-Term Interest Rate (Short-Term Borrowing Between Financial Institutions and Short-Term Government Paper)	OECD Database, Chilean Central Bank Annual Reports (For Chilean Short and Long-Term Interest Rates), Knoema Database (For Estonian Long-Term Interest Rates), YCharts (For Luxembourg and Slovenia Long-Term Interest Rates) CBRT Database (For Turkey Short- and Long-Term Interest Rates)
LONG_INT_RATE	Long-Term Interest Rate (Government Bonds Maturing in Ten Years)	
REAL_EXCHANGE_RATE	Real Exchange Rate	World Bank Database, FRED Database (for Estonia, Lithuania, Slovenia and Turkey)
TERM_TRADE	Terms of Trade	OECD Database
REV_GDP	Public Revenues/GDP Ratio	IMF Database
EXP_GDP	Public Expenditures/GDP Ratio	
GOV_DEBT_GDP	Gross Public Debt/GDP Ratio	
PR_DEBT_GDP	Private Sector Debt/GDP Ratio	IMF Database
FIN_INS_DEV	Financial Institutions Development Index	IMF Database

FIN_MAR_DEV	Financial Markets Development Index	
ECON_FREE	Economic Freedom	Fraser Institute Economic Freedom Index
ACCOUNTABILITY	Voice (Public Participation in Governance), Freedoms and Accountability	
POLITICAL_STABILITY	Political Stability and Absence of Violence/Terrorism	World Bank Database - Worldwide Governance Indicators Project
GOV_EFFECTIVENES	Government Effectiveness	
REG_QUALITY	Regulatory Quality	
LAW_RULES	Rule of Law	
CORRUPTION_CONTROL	Control of Corruption	

Source: Developed by the authors.

2.2 Theoretical background of the model

Price stability has an important place on the basis of a stable economic structure because price stability and market confidence limit uncertainty. The real house price variable, one of the independent variables, was included in the model to determine the effect of the housing market following a different course from the general market trend in the said period on the emergence of the crisis. In addition, the consumer price variable was used to determine the effect of the general price change. The stock price variable is included in the model because it is an important indicator of confidence in the market and allows the process to be followed within the welfare-depression cycle.

Workers, who make up a large part of society and realize a significant part of consumption expenditures, play an important role in ensuring the continuity of demand. Considering the effect of the vicious cycle created by the relationship between demand and employment on economic crises, the unemployment rate variable is included in the model.

The slowdown in growth rates or the disruption of growth is at the center of many economic problems, especially unemployment. The market-centered capitalist economic system necessitates continuous growth. In this framework, the annual rate of change in GDP per capita is included in the model.

The country's constant deficit in commercial and financial transactions with the outside world causes pressure on the national currency, which threatens economic stability and sustainable growth. To determine the relationship between these effects and financial problems, the ratio of the current account balance to the GDP is included in the model.

One of the variables included in the model is the industrial production index. Production also expands due to increased consumption expenditures during the welfare period. However, the fact that increased consumption, such as consumption expenditures fed by mortgage-backed loans, is not based on a healthy basis may create an illusion for production.

After the crises in the 1990s, global savings' search for a safe haven and the effect of the policies implemented by the American authorities for the continuation of growth, interest rates decreased for all maturities. This has had a significant impact on the asset bubble that formed before the 2008 crisis. To see the effect of the movements in interest rates in the period under consideration, short- and long-term interest rate variables are included in the model.

Especially in developing countries, as a result of erroneous policies implemented by governments and monetary authorities, the unsustainability of exchange rates often results in devaluation. In this

context, the real exchange rate variable was included in the model to determine the role of exchange rates in the 2008 crisis.

Foreign trade is an important activity that affects social welfare, and the sustainability of trade and its beneficial effect are directly related to the trade balance. The terms of the trade variable are included in the model, considering that it is one of the main indicators of the direction of trade and the benefit from foreign trade and is an important determinant of the disruptions caused by foreign trade.

The place of the public sector in the economy has been one of the most debated issues throughout the history of economic thought, and there are many evaluations of the role of public policies in the emergence and exit process of crises. In this context, the ratios of public revenues, public expenditures and public debt to GDP variables were included in the model to determine the effect of the public sector during the 2008 crisis.

Before the 2008 crisis, new financial instruments that emerged as a result of financial innovation provided an opportunity to support the consumption of society without a similar increase in income. With low interest rates, this situation reached the level of exuberance, and the crisis became inevitable as the debt became unsustainable. In this framework, the ratio of private sector debt to GDP, which shows the course of private sec-tor debt, is included in the model.

Financial structures play important roles in issues such as growth, development, resource allocation and social welfare, as well as facilitating life, reducing transaction costs and providing a secure exchange environment. The Financial Development Index was developed by the IMF to evaluate financial institutions and financial markets in terms of ease of access, depth and efficiency (IMF, 2021). Financial institutions and financial markets development index variables were included in the model to determine the role of the factors considered to be financial development in the 2008 crisis.

Another variable included in the model, considering its close relationship with growth, development and disruptions in the economic structure, as well as the fact that it contains institutional elements, is economic freedom. The economic freedom data set prepared by the Fraser Institute is an important resource in this regard. The index consists of the size of government, legal system and property rights, sound money, freedom to trade internationally and regulations, and the economic freedom score of the countries is determined by taking the average of all these factors (Fraser Institute, 2021).

One of the most important contributions of institutional economists to economic thought is the contribution of governance to economic efficiency. Worldwide Governance Indicators (World Bank, 2021), which were implemented to determine this contribution, were included in the model within this framework. Voice, freedoms and accountability, political stability and lack of violence and terrorism, government effectiveness, regulatory quality, rule of law, and corruption control are the six dimensions of governance that comprise the set of indicators (Kaufmann et al., 2010). The data reflect the views of public, private and NGO sector experts from around the world surveyed on governance, as well as from available data sources. The crisis dummy variable of whether there was a crisis in the relevant country was used as the dependent variable for the period in the model.

2.3 Empirical Methodology

When the models created for the determination of the causes of crises and the prediction of possible crises are examined, it can be seen that any of the signal approaches, logit or probit models or a few of them are used comparatively. In this analysis, the logit model will be used because of its compatibility with the structure of the variables and some of the advantages it provides.

Linear regression is the basic regression model in which the dependent variable is estimated with the help of one or more independent variables. However, when the dependent variable takes a binary value rather than a continuous one as present (1) or absent (0), the error terms will also take the values of 1 and 0, the variance will not be constant, and the estimated mean values may go out of the range of 0 to 1. These violations make the linear regression model unsuitable for the analysis of binary responses. Logistic regression is one of the leading methods used to model binary responses. Hilbe (2009) stated that although other models can be used in this type of analysis, only logistic regression can be used in estimating the odds ratio for model predictors.

The equation for the linear regression is:

$$Y_i = \sum \beta_k X_{ik} + u_i \tag{1}$$

This equation is the expression of the linear relationship between the change in the independent variables (X_i) and the dependent variable (Y) (Aldrich & Nelson, 1984, p. 11). However, as we mentioned above, linear regression will not yield realistic results when the dependent variable takes a nominal (nominal) value rather than a continuous one, that is, when a dummy variable is used. One of the alternatives that can be used in this case is the logit model. Logit regression equation:

$$\ln\left[\frac{P}{1-P}\right] = \sum \beta_k X_{ik} + u_i \tag{2}$$

The probability value in equation (P) is:

$$\frac{P}{1-P} = e^{\sum \beta_k X_{ik} + u_i} \tag{3}$$

$$P = \frac{e^{\sum \beta_k X_{ik} + u_i}}{1 + e^{\sum \beta_k X_{ik} + u_i}} \tag{4}$$

$$P = \frac{1}{1 + e^{-(\sum \beta_k X_{ik} + u_i)}} \tag{5}$$

$$1 - P = \frac{1}{1 + e^{\sum \beta_k X_{ik} + u_i}} \tag{6}$$

The distribution of errors (u) in the logit model also differs. According to the linear regression assumptions, the mean of the error term is zero, it is normally distributed, and its variance is constant. In the logit model, the error term takes one of two possible values, and its mean is still zero, while its variance is P(1-P). As a result, when the logit model is used in regression analysis, the conditional mean of the regression equation is limited to between 0 and 1, the distribution of errors is defined by this binary structure, and the principles that guide linear regression continue to be valid (Hosmer & Lameshow, 2000).

In this study, in which the 2008 crisis was centered, OECD country data were preferred because both the crisis affected developed countries to a large extent and it had a relatively homogeneous structure. Despite the possibility that the behavior of some explanatory variables, such as house prices, GDP growth and interest rates, will be affected by the crisis itself (Demirgüç-Kunt & Detragiache, 1998),

postcrisis data are also included in the regression to prevent possible loss of information by considering the existence of a mutual effect. The basis of the internality problem of the variables lies in the fact that the determination of the start and end dates of the crises includes subjective criteria (Barrell et al., 2010). Although this possibility still exists, the fact that the crisis database we used (Laeven & Valencia, 2018) was created based on criteria accepted by the authorities partially eliminates this problem. In the model, the use of annual data due to the publication times of some of the variables weakens the endogeneity problem for countries where the crisis lasts for one year and for countries where the crisis period is considered a process rather than a point. Otherwise, methods such as excluding the postcrisis values of the variables from the model will necessitate handling each crisis individually, which prevents the search for a common cause-effect relationship regarding crises. Similarly, during the observation period, not only the countries that experienced a crisis but also the countries that did not experience it were included in the analysis, and in this way, the aim was to partially disable the parameters that seem to be related to the random crisis but do not actually affect it.

In this study, which we will carry out using the logit model, short-term data in which all variables are included in general, only statistically significant variables are included in the analysis, data between 2000 and 2018 regarding the 2008 crisis are included, and long-term data between 1980 and 2018 are included for comparison. Three models will be used. Explanations of the content of the variables used are provided in the title of the variables. The equations for the models are as follows:

Model 1:

$$E(\text{Bank_Crises}|x) = \ln\left[\frac{P}{1-P}\right] = \beta_0 + \beta_1\text{Real_House_Price} + \beta_2\text{Con_Price_Rent} +$$

$$\beta_3\text{Share}_{\text{Price}} + \beta_4\text{Unemp Rate} + \beta_5\text{GDP_PC_Change} + \beta_6\text{Cur_Bal_GDP} + \beta_7\text{Inds_Pro} +$$
$$\beta_8\text{Short_Int_Rate} + \beta_9\text{Long_Int_Rate} + \beta_{10}\text{Real_Exchange_Rate} + \beta_{11}\text{Term_Trade} +$$
$$\beta_{12}\text{Rev_GDP} + \beta_{13}\text{Exp_GDP} + \beta_{14}\text{Gov_Debt_GDP} + \beta_{15}\text{Pr\ _Debt_GDP} + \beta_{16}\text{Fin_Ins_Dev} +$$
$$\beta_{17}\text{Fin_Mar_Dev} + \beta_{18}\text{Econ_Free} + \beta_{19}\text{Accountability} + \beta_{20}\text{Political_Stability} +$$
$$\beta_{21}\text{Gov_Effectiveness} + \beta_{22}\text{Reg_Quality} + \beta_{23}\text{Law_Rules} + \beta_{22}\text{Corruption_Control} \quad (7)$$

Model 2:

$$E(\text{Bank_Crises}|x) = \ln\left[\frac{P}{1-P}\right] = \beta_0 + \beta_1\text{Real_House_Price} + \beta_2\text{Share_Price} +$$

$$\beta_3\text{GDP_PC_Change} + \beta_4\text{Inds_Pro} + \beta_5\text{Short_Int_Rate} + \beta_6\text{Real_Exchange_Rate} +$$
$$\beta_7\text{Gov_Debt_GDP} + \beta_8\text{Fin_Ins_Dev} + \beta_8 Fin_Mar_Dev + \beta_9\text{Econ_Free} +$$
$$\beta_{10}\text{Gov_Effectiveness} + \beta_{11}\text{Reg_Quality} \quad (8)$$

Model 3:

$$E(\text{Bank_Crises}|x) = \ln\left[\frac{P}{1-P}\right] = \beta_0 + \beta_1\text{Real_House_Price} + \beta_2\text{Share_Price} +$$

$$\beta_3\text{GDP_PC_Change} + \beta_4\text{Inds_Pro} + \beta_5\text{Real_Exchange_Rate} + \beta_6\text{Fin_Dev} \quad (9)$$

3. Research results

Before the model estimation, the "stationarity of the series", which is one of the basic statistical assumptions, was tested to make a healthy estimation. At the point of determination of stationarity,

the Levin–Lin–Chu and Im–Persaran–Shin unit root tests, which are the most frequently used methods in panel data analysis, and the Pesaran CADF unit root test, which allows determination of the stationarity of series under cross-sectional dependence, were preferred (Table 2).

Table 2. Stationarity test results

№	Variables	Levin–Lin–Chu		Im–Persaran–Shin		Pesaran CADF	
		t statistic	p value	"Z" "t" Tilde Bar	p value	"Z" "t" Tilde Bar	p value
1	bank_crises	Dummy variable					
2	real_house_price	-	-	-3.7685	0.000***	-3.377	0.000***
3	con_price	-5.2462	0.000***	-13.2257	0.000***	-4.051	0.000***
4	share_price	-	-	-10.0274	0.000***	-9.82	0.000***
5	unemp_rate	-8.7747	0.000***	-7.7282	0.000***	-5.424	0.000***
6	gdp_pc_change	-9.5121	0.000***	-9.4984	0.000***	-8.475	0.000***
7	cur_bal_gdp	-8.1737	0.000***	-11.9443	0.000***	-14.548	0.000***
8	inds_pro	-	-	-12.1164	0.000***	-8.139	0.000***
9	short_int_rate	-	-	-2.5856	0.005***	-7.431	0.000***
10	long_int_rate	-	-	-9.6769	0.000***	-13.817	0.000***
11	real_exchange_rate	-8.0026	0.000***	-10.3199	0.000***	-12.293	0.000***
12	term_trade	-8.7684	0.000***	-12.4797	0.000***	-13.061	0.000***
13	rev_gdp	-	-	-12.1823	0.000***	-15.494	0.000***
14	exp_gdp	-	-	-11.3683	0.000***	-14.06	0.000***
15	gov_debt_gdp	-	-	-7.6877	0.000***	-12.568	0.000***
16	pr_debt_gdp	-4.804	0.000***	-7.4621	0.000***	-9.326	0.000***
17	fin_ins_dev	-7.2624	0.000***	-1.6915	0.045**	-3.987	0.000***
18	fin_mar_dev	-5.7151	0.000***	-4.2942	0.000***	-3.402	0.000***
19	econ_free	-5.7603	0.000***	-5.2085	0.000***	-4.406	0.000***
20	accountability	-11.351	0.000***	-11.5147	0.000***	-14.525	0.000***
21	political_stability	-9.1935	0.000***	-12.3636	0.000***	-15.345	0.000***
22	gov_effectiveness	-10.0865	0.000***	-13.0102	0.000***	-16.034	0.000***
23	reg_quality	-11.17	0.000***	-12.6819	0.000***	-16.19	0.000***
24	law_rules	-12.8454	0.000***	-11.7595	0.000***	-15.502	0.000***
25	corruption_control	-1	0.000***	-11.9611	0.000***	-13.937	0.000***

Notes: ***Significant at the 1% level, **significant at the 5% level, *significant at the 10% level.
Sources: developed by the authors

According to the test results, 16 out of 25 variables were found to be significant at the 1% level in the Levin–Lin–Chu (2002) test. In the Im–Persaran–Shin (2003) test, on the other hand, 23 of the variables are significant at the 1% and 1% levels at the 5% level. According to the Pesaran (2007) CADF test, all variables are significant at the 1% level. According to the Levin–Lin–Chu test, no results could be obtained due to missing data for 9 variables. Within the framework of these results, the analysis continued with the assumption that the series were stationary.

In the next step, is the model "under fixed effects?" or “under random influences?” The Hausman Specification Test was applied to determine which estimation would be more appropriate (Table 3).

Table 3. Hausman Specification Test

Chi^2	**2.01**

Prob> Chi^2	0.9913

Sources: developed by the authors

To determine the model to be used with this test, the alternative hypothesis of a consistent but asymptotically inefficient estimator is tested, as opposed to the null hypothesis of an asymptotically efficient estimator (Hausman, 1978). With the Hausman Specification Test, the "H0" hypothesis, in which there are random effects, versus the "H1" hypothesis, in which there is a fixed effect, is tested to determine whether a fixed or random effect is preferred in the analysis. According to the test results, the H0 hypothesis is valid, and it would be appropriate to estimate the model under random effects. In this framework, the model was estimated by continuing to work under random effects (Table 4).

Table 4. Model 1 – Logit Model Random Effects Results (for all variables)

Variables	Coefficients	P>|z|
bank_crises	-22.29199	0.094
real_house_price	4.51E-14	1.000
con_price	-18.91949	0.000
share_price	-0.1559556	0.965
unemp_rate	-1.479981	0.001
gdp_pc_change	-0.176433	0.089
cur_bal_gdp	31.92891	0.046
inds_pro	1.271907	0.000
short_int_rate	0.1597309	0.793
long_int_rate	-36.22258	0.001
real_exchange_rate	-31.59521	0.186
term_trade	20.39837	0.259
rev_gdp	-10.6288	0.485
exp_gdp	20.56205	0.000
gov_debt_gdp	-16.68566	0.118
pr_debt_gdp	46.15728	0.000
fin_ins_dev	5.706254	0.003
fin_mar_dev	-112.7227	0.000
econ_free	-0.0739559	0.935
Accountability	-0.0122353	0.957
political_stability	6.115605	0.000
gov_effectiveness	-7.8095	0.090
reg_quality	4.810094	0.513
law_rules	-1.935362	0.566
corruption_control	234.7112	0.000

Sources: developed by the authors

The final model was obtained by eliminating the variables that were not statistically significant as a result of the estimation (Table 5).

Table 5. Model 2 – Logit Model Random Effects Results (2000-2018) (for significant variables only)

Variables	coefficients	P>|z|

real_house_price	-47.6927	0.004***
share_price	-29.5456	0.000***
gdp_pc_change	-1.88173	0.000***
inds_pro	58.58101	0.002***
short_int_rate	1.745688	0.000***
real_exchange_rate	-64.3292	0.000***
gov_debt_gdp	33.97006	0.000***
fin_ins_dev	55.6395	0.000***
fin_mar_dev	13.5382	0.000***
econ_free	-193.711	0.000***
gov_effectiveness	13.29426	0.000***
reg_quality	-9.74852	0.024**
Cons	400.877	0.000***
Wald chi^2 (16)	142.16	
Log likelihood	-81.5209	
Probability > chi^2	0,0000	
Likelihood-ratio test of rho=0: $chibar^2$ (01) = 114.93 Prob ≥ $chibar^2$ = 0.000		

Notes: *** Significant at the 1% level, significant at the 5% level, *significant at the 10% level.
Sources: developed by the authors

In the final model we obtained for the years 2000-2018, there are 12 independent variables based on 571 observations from 36 countries. All variables in the final model are individually significant. The test results for the overall model show that the variables in the model are also significant overall. According to these results, half of the independent variables included in the model (annual change in industrial production, short-term interest rates, annual change in the ratio of public sector debt to GDP, financial institution development level, financial market development level, and government efficiency) are in the same direction as the other variables. Half of them (annual change in real house prices, annual change in stock prices, annual change in per capita GDP, annual change in real exchange rates, economic freedoms and the quality of regulations) have the opposite effect. From these coefficients, we can conclude that the variables that contributed to this crisis were annual change in industrial production, short-term interest rates, annual change in the ratio of public sector debt to GDP, financial institution development level, financial market development level, and government efficiency. It seems that government debt and the development level of financial institutions are the most important causes of the crisis. Surprisingly, economic freedom does not seem to be effective in creating the crisis. Housing prices and the real exchange rate are the side results of the crisis rather than the causes.

In the next stage, to compare the 2008 crisis and the previous crises, a model was created by using the data of 36 OECD countries between 1980 and 2018. The results obtained from this model are as follows (Table 6).

Table 6. Model 3 – Logit Model Random Effects Results (1980-2018) (for significant variables only)

variables	**coefficients**	**P>|z|**

real_house_price	-18.8568	0.000***
share_price	-5.7095	0.000***
gdp_pc_change	-0.3242	0.004***
inds_pro	14.0086	0.004***
real_exchange_rate	8.4294	0.013***
fin_dev	3.0473	0.000***
Cons	-1.2584	0.034**
Wald chi^2 (16)	83.60	
Log likelihood	-197.7118	
Probability > chi^2	0,0000	
Likelihood-ratio test of rho=0: $chibar^2$ (01) = 37.11 Prob ≥ $chibar^2$ = 0.000		

Notes: *** Significant at the 1% level, significant at the 5% level, *significant at the 10% level.
Sources: developed by the authors

In the final model we obtained for the period 1980-2018, there are 6 independent variables based on 938 observations from 36 countries. All the variables in this model are also individually significant, and the model appears to be significant overall. Due to the lack of data for the relevant period, some variables could not be included in the analysis between 1980 and 2018. The financial development index was included in the model as a single variable in the long run since the financial institutions and financial markets development indexes did not yield significant results depending on the convergence in the long run. The findings indicate that the 1980-2018 results are in parallel with the 2000-2018 results. The contribution and roles of the variables for the crisis, whether they are the main causes or not, seem very similar to the Model 2 results except for the condition for real exchange.

Discussion and policy implications

According to the evaluations, the political tradition of the countries and the legal legislation shaped on this basis also play important roles in terms of economic crises. It has been argued that economic success and failure are a reflection of the institutional tradition rather than the macro policies implemented and that institutional heritage is also the basis of weak macroeconomic performance and inconsistent policies.

Stock prices, one of the variables whose relationship with the crisis has been revealed many times in past analyses (Estrella & Mishkin, 1996; Babecký et al., 2012), have a negative relationship with the crisis, similar to real house prices, according to both our short- and long-term analyses. was found to show a relationship. The share sales method, whose purpose is to provide long-term resources to the company through the transfer of company shares, has become a highly liquid investment tool in today's practice with the development of technology and increased accessibility to financial systems. This situation, in addition to its efficiency-enhancing results such as the redistribution of resources and the conversion of small savings into investments, may also have deepening effects on the crisis due to panic sales similar to those of the housing market during crisis periods.

Another variable that has been among the determinants of crises in past analyses (Demirgüç-Kunt & Detragiache, 1998; Pedro et al., 2018) is GDP growth. In these studies, low GDP growth or economic contraction are shown to be leading indicators of crises. Our analysis revealed that there is a negative relationship between economic growth and crises in both the short and long term.

According to our estimation results, short-term interest rates for the 2000-2018 period were found to have a positive relationship with the crisis, in line with the literature (Demirgüç-Kunt & Detragiache, 1998; Kaminsky & Reinhart, 1998). Prior to the 2008 crisis, interest rates began to rise in response to growing risks. These rates had been low for many years as a result of both external influences and policies put in place to ensure that growth would continue. The cycle of trying to convert existing debts into new loans has become unsustainable in a system where borrowing costs have increased.

According to the analysis results, it has been determined that there is a unidirectional relationship between the crisis and public sector debt. In this context, it is possible to say that the increasing public debt burden makes countries more fragile and reduces the power of intervention in the case of any disruption. Minsky suggested that a strong state and a strong central bank are important in the prevention of crises and in the process of escaping crises (Minsky, 2013).

It has been observed that the economic freedom variable also exhibits a negative relationship with the crisis, in line with the literature (Baier et al., 2012). However, it should not be forgotten that the concept of freedom here is a controlled freedom that is legally secured and strengthened with effective control mechanisms rather than unlimited freedom. It is thought that freedom and uncontrolled financial innovations in financial markets were quite effective in the 2008 crisis (King, 2017).

Using the results of this study, not only will studies examining economic crises in the institutional economics literature gain innovation in incorporating empirical features but also, due to the large number of variables and long-term analysis used, the causes of the crisis will be better revealed, and serious policy recommendations will be made to prevent similar crises that are likely to occur in the future. However, there are also some limitations of this study. This study was conducted for OECD countries, considering that it would reflect the crisis better, but the crisis affected almost all open countries in the world to a greater or lesser extent. Additionally, there are some data deficiencies regarding the countries, although they are not at a level that would affect the results. In future studies, the empirical model of this study can be used for other country groups around the world. As in the institutional economics perspective in this study, the crisis can be examined from the perspective of other schools of economic theory in new studies. In addition, the variables used in this study and whose relationship with the crisis is explained both theoretically and empirically may guide other studies.

The evidence of the claim in question, the will of politicians in the face of the recent global epidemic, can also be seen within the framework of policies that differ from country to country. The path dependence created by the policies shaped in the axis of the political and institutional tradition followed by the governments during the epidemic and the consequences dragged the countries have revealed the importance of the governance issue in terms of economic analysis. This process provides insight into how to manage crises, perhaps not how to prevent them.

Conclusions

The phenomenon of crisis contains great uncertainty behind it and makes an absolute explanation impossible. The final models that emerged within the framework of our analysis are also under the influence of this basic fact. The results show that the model parameters, especially the macroeconomic indicators, are compatible with the literature.

The asset bubble that emerged in the housing market was the trigger of the 2008 crisis. According to the results of the analysis, there is an inverse relationship between real housing prices and crises both in the short and long term. The rise in prices, either by chance or as a result of interventions, causing an asset bubble and the ensuing collapse plays an important role in the occurrence and deepening of crises. The expansion of credit is caused by an increase in the value of assets pledged as collateral during welfare periods. A growing loan volume is produced by using money secured by hazy collateral for new purchases and then using those same purchases as collateral for another loan. As a result, prices rise due to rising effective demand. Rising borrowing costs are a result of a more uncertain society and the perception that prices will never increase. In certain cases, borrowing costs are greater than the value of collateral, particularly when debts are being settled through repeated borrowing. In this instance, there is less demand for investment loans, and there is an increased risk of existing loans defaulting.

It has been determined that stock prices have an inverse relationship with the crisis in both our short- and long-term analyses. The moral hazard and principal-agent problem that arises in modern companies through the transfer of capital's management rights can have much more devastating effects in the financial sector. The problems caused by the actions of fund managers, such as prioritizing their personal interests, have a domino effect on the financial market, and the resulting tendency toward selling has an accelerating effect on the collapse.

Our analysis revealed that there is an inverse relationship between economic growth and crises in both the short and long term. In addition to the increase in demand during the welfare period, the costs of new investments also cause an increase in prices, and increasing prices cause a lack of demand after a while creating downwards pressure on prices. Pessimistic expectations and increased risk aggravate loan costs and loan conditions, leading to a deepening of the crisis. Limited credit facilities, decreasing demand and profitability cause growth to slow or even stop.

Another variable found in both our short- and long-term models is the industrial production index. Our estimation results show the existence of a positive relationship between industrial production and the crisis, contrary to per capita GDP growth. It is estimated that this may be because the volume of industrial production, which expanded as a result of consumption and growth supported by credit before the crisis, did not decrease simultaneously with the crisis.

In the past, the real exchange rate variable, which was shown among the reasons for crises in analyses aimed at explaining currency crises, especially in developing countries, was also statistically significant for both the short and long term in our final forecasting model. The real exchange rate variable, which has an inverse relationship with crises, reveals the possible impact of unsustainable policies implemented to protect the value of the national currency.

Our estimation results show that, in keeping with the literature, there is a positive correlation between short-term interest rates and the crisis during the 2000–2018 period. Before the 2008 crisis, interest rates began to rise in response to growing risks. Prior to this, rates had been low for many years because of both foreign influences and policies put in place to ensure that growth would continue. The cycle of trying to refinance existing debt with new loans has become unsustainable due to rising borrowing costs in the system. The fact that the ease of financing in welfare periods erodes the margins of safety and increases uncertainty and risks ultimately aggravates financing costs and conditions.

The public sector debt-to-GDP variable is also statistically significant for our model, which covers only the 2000–2018 period. It has been determined that there is a same-sided relationship between the crisis and public sector debt. In this context, it is possible to say that the increasing public debt burden makes countries more fragile and reduces the power of intervention in the case of any disruption. A strong state and a strong central bank play important roles in the exit process from the crisis as well as in the prevention of the crisis.

Rather than being the root cause of the crisis, the dynamics that preceded it have a common influence on fluctuations in variables such as public sector debt, growth and industrial production, exchange rates, housing and stock prices, and interest rates. In fact, they acquire a quality that influences one another as a result of the crisis they go through. Nonetheless, it would not be incorrect to argue that the economic system and institutional tradition are the two most crucial aspects of the crisis. Robust institutional design, efficient legal frameworks, and robust banking regulation and supervision are critical for a nation's capacity to successfully pursue financial liberalization.

According to the estimation results, the financial development title is also related to the crisis in both the short and long term. The results regarding financial institutions and financial markets for the period 2000-2018 were evaluated separately. For the 1980-2018 period, financial development was considered a single variable because the values for the mentioned variables converged and affected each other. The most striking results in our final model are those related to financial development. Within the framework of model outputs, there is a same-sided relationship between crises and some elements considered financial development in both the short and long term. The results show that the factors considered financial development can also pose risks for the system. The results related to financial development give us clues that our strengths can sometimes create weaknesses and show that the features that we consider development may need to be reconsidered.

Another variable included in our final model covering the period 2000-2018 is within the scope of the economic freedom index prepared by the Fraser Institute. Our analysis revealed that the economic freedom variable yielded statistically significant results and showed an inverse relationship with the crisis, which is in line with the literature. However, it should not be forgotten that the concept of freedom is more than unlimited freedom; it is a controlled freedom that is legally guaranteed and strengthened by effective control mechanisms. From this perspective, the analyses of developing countries revealed that crises emerged following financial liberalization and that liberalization and uncontrolled financial innovations in financial markets were effective during the 2008 crisis.

The last statistically significant variables for the period 2000-2018 are the efficiency of government and the quality of regulations within the scope of the Worldwide Governance Indicators Project. Governance indicators were also not included in the long-term model since they started to be published after 1996. According to the estimation results, the government regulations that allow and encourage the development of the private sector reduce the probability of a crisis, while the situation in which the economic impact of the public is high and bureaucracy and politics are dominant may have a negative effect.

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Reference

1. Abo Saeid, T. (2013). European economic crisis and its influence on the Arab Spring. *Forum Scientiae Oeconomia*, 1(2), 35–48. https://ojs.wsb.edu.pl/index.php/fso/article/view/93
2. Aka, B. E. (2006). On the Duration of the Financial System Stability Under Liberalization, *Emerging Markets Rewiew*, 7(2), 147–161.
3. Aldrich, J. H., & Nelson, F. D. (1984). *Linear Probability, Logit, and Probit Models*. SAGE Publications, Inc., London.
4. Alessi, L., & Detken, C. (2009). Real Time Early Warning Indicators for Costly Asset Price Boom/Boost Cycles: A Role for Global Liquidity. *ECB Working Paper Series*, 1039. European Central Bank.
5. Anton, G., Cepoi, C.O., & Huidumac-Petrescu, C.E. (2022). Estimating probability of default for systemically important financial institutions during covid-19 pandemic. Evidence from Europe and USA. *Romanian Journal of Economc Forecasting*, 25(2), 44–53.
6. Babecký, J., Havránek, T., Matějů, J., Rusnák, M., Šmídková, K., & Vašíček, B. (2012). Leading Indicators of Crisis Incidence: Evidence from Developed Countries, *ECB Working Paper Series*, 1486. Frankfurt: European Central Bank.
7. Baier, S. L., Clance, M., & Dwyer, G. P. (2012). Banking Crises and Economic Freedom. In J. Gwartney, R. Lawson, & J. Hall, Economic Freedom of the World: 2012 Annual Report. Fraser Institute, Vancouver, 201–217.
8. Barrell, R., Davis, E. P., Karim, D., & Liadze, I. (2010). Bank Regulation, Property Prices and Early Warning Systems for Banking Crises in OECD Countries, *Journal of Banking & Finance*, 34(9), 2255–2264.
9. Bussiere, M., & Fratzscher, M. (2006). Towards a New Early Warning System of Financial Crises, *Journal of International Money and Finance*, 25(6), 953–973.
10. Chenguel, M. B. (2014). The Subprime Crisis Contagion Effect on Developed Countries, Journal of Business and Management Research, 3(1), 61–70.
11. Demirgüç-Kunt, A., & Detragiache, E. (1998). The Determinants of Banking Crises in Developing and Developed Countries, *IMF Staff Papers*, 45(1), 81–109.
12. Dequech, D. (2007). Neoclassical, mainstream, orthodox, and heterodox economics. *Journal of Post Keynesian Economics*, 30(2), 279–302.
13. Dequech, D. (2017). Some institutions (social norms and conventions) of contemporary mainstream economics, macroeconomics and financial economics. *Cambridge journal of economics*, 41(6), 1627–1652.
14. Estrella, A., & Mishkin, F. S. (1996). Predicting U.S. Recessions: Financial Variables as Leading Indicators, *Research Paper*, 9609. Federal Reserve Bank of New York Public Information Department.
15. Fraser Institute - Economic Freedom. (2021). https://www.fraserinstitute.org/economic-freedom

16. Goldstein, M., & Turner, P. (1996), Banking Crises in Emerging Economies Origins and Policy Options, *BIS Economic Papers*, 46. Basle: Bank for International Settlements.
17. Hadziahmetovic, A., Halebic, J., & Colakovic-Prguda, N. (2018). Economic crisis: Challenge for economic theory and policy. *Eurasian Journal of Economics and Finance*, 6(4), 48–55.
18. Hausman, J. A. (1978). Specification Tests in Econometrics, Econometrica, 46(6), 1251–1271.
19. Hilbe, J. M. (2009). *Logistic Regression Models*. CRC Press.
20. Hosmer, D. W., & Lameshow, S. (2000), *Applied Logistic Regression* (2. ed.), John Wiley and Sons.
21. Hsiao, C. (2007). Panel Data Analysis - Advantages and Challenges, *An Official Journal of the Spanish Society of Statistics and Operations Research*, 16(1), 1–22.
22. Huang, M., & Chiang, H.-H. (2017). An Early Alarm System for Housing Bubbles, The *Quarterly Review of Economics and Finance*, 63, 34–49.
23. Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for Unit Roots in Heterogeneous Panels, Journal of Econometrics, 115(1), 53-74.
24. IMF (2020). IMF Financial Development Index Database. https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b
25. İnsel, A. & Kayıkçı, F. (2013). Determinants of the Current Account Balance in Turkey: An ARDL Approach, *Economic Research*, 26(1), 1-16.
26. Jacobs, M. (2024). After Neoliberalism: Economic Theory and Policy in the Polycrisis. *The Political Quarterly*, 1–14. https://doi.org/10.1111/1467-923X.13363
27. Jiménez-Rodríguez, R., & Prats, M. A. (2023). New challenges in international economics and finance. *The World Economy*, 46(9), 2558–2563.
28. Kaminsky, G. L., & Reinhart, C. M. (1999). The Twin Crises: The Causes of Banking and Balance of Payments Problems, *The American Economic Review*, 89(3), 473–500.
29. Kaminsky, G., Lizondo, S., & Reinhart, C. M. (1998). Leading Indicators of Currency Crises, *IMF Staff Papers*, 45(1), 1–48.
30. Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues. World Bank policy research working paper, 5430. https://ssrn.com/abstract=1682130
31. King, M. A. (2017). *The End of Alchemy: Money, Banking and the Future of the Global Economy*. London.
32. Krugman, P. (1979), A Model of Balance-of-Payments Crises, *Journal of Money, Credit and Banking*, 11(3), 311–323.
33. Laeven, L., & Valencia, F. (2018). *Systemic Banking Crises Revisited*. International Monetary Fund.
34. Laina, P., Nyholm, J., & Sarlin, P. (2015). Leading Indicators of Systemic Banking Crises: Finland in a Panel of EU Countries, *ECB Working Paper Series*, 1758. European Central Bank.
35. Levin, A., Lin, C.-F., & J. Chu, C.-S. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties, *Journal of Econometrics*, 108(1), 1–24.
36. Majerová, I. ., & Pražák, T. . (2020). The impact of crises on the relationship between stock market development and macroeconomic variables: evidence from Hong Kong and Singapore. *Forum Scientiae Oeconomia*, 8(4), 27–41. https://doi.org/10.23762/FSO_VOL8_NO4_2
37. Miao, J., & Wang, P. (2015). Banking bubbles and financial crises, *Journal of Economic Theory*, 157(1), 763–792.

38. Minsky, H. P. (2013). *İstikrarsız Bir Ekonominin İstikrarı*. Translated by: Oğuz Esen. Ankara: Efil Publications.
39. Mishkin, F. S. (1990). Asymmetric Information and Financial Crises: A Historical Perspective, *NBER Working Paper Series*, 3400. Cambridge.
40. Mishkin, F. S. (2001). Financial Policies and the Prevention of Financial Crises in Emerging Market Countries, *NBER Working Paper Series*, 8087. Cambridge.
41. Nijkamp, P., Ţigănaşu, R., Bănică, A., & Pascariu, G. C. (2024). Institutional adaptability: its relevance for enhancing resilience and smart specialization capacity of the European Union's lagging regions. *Eurasian Geography and Economics*, 65(1), 1-33.
42. Pan, W., Hosli, M. O., & Lantmeeters, M. (2023). Historical institutionalism and policy coordination: origins of the European semester. *Evolutionary and Institutional Economics Review*, 20(1), 141–167.
43. Pedro, C. P., Ramalho, J. J., & da Silva, J. V. (2018). The Main Determinants of Banking Crises in OECD Countries, *Review of World Economics*, 154(1), 203–227.
44. Pesaran, M. H. (2007). A Simple Panel Unit Root Test the Presence of Cross-Section Dependence, Journal of Applied Econometrics, 22(2), 265–312.
45. Reinhart, C. M., & Rogoff, K. S. (2008). Is the 2007 US Sub-Prime Financial Crisis So Different? An International Historical Comparison, *American Economic Review*, 98(2), 339–344.
46. WGI (2021). World Bank-The Worldwide Governance Indicators (WGI) project. (https://info.worldbank.org/governance/wgi/