

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Humanities



Bachelor Thesis

**Economic Crisis of 2008 and its Impact on Socio-
Economic Development of Chosen Regions in
Kazakhstan**

Botagoz Utegen

© 2025 CZU Prague

BACHELOR THESIS ASSIGNMENT

Botagoz Utegen

Business Administration

Thesis title

Economic crisis 2008 and its Impact on Socio-economic Development of Chosen Regions in Kazakhstan

Objectives of thesis

The objective of the bachelor thesis is to address the subject of world crises based on the example of a selected crisis that is largely known as The Great Recession and that occurred in 2008-2009. The thesis explores the effect of the economic crisis predominantly on the socioeconomic environment of the Republic of Kazakhstan, which is a former Soviet Republic that became independent shortly after the collapse of the union in 1991.

Methodology

The following thesis consists of both inductive and deductive methods. In the literature review, the insight is taken into the premises of The Great Recession with its further development all over various regions of Kazakhstan. In addition, the thesis focuses on the phenomenon itself, as well as on the sequence of events that occurred right after the specified events.

For the quantitative techniques, the bachelor thesis predominantly focuses on two techniques – time series analysis and linear regression analysis. The time series analysis is represented by charts and graphs that present visualizations for the selected socioeconomic indicators reflecting the entire country and the two regions – Jambyl and Almaty.

In the subsequent chapters, the bachelor thesis measures the effect of the selected crisis, compares it with two other major crises (the COVID-19 pandemic and the local economic crisis of Kazakhstan in 2015-2016), and also compares their effects between the Jambyl and Almaty regions. In the discussion, the thesis provides recommendations on how the negative effects of potential future crises can be mitigated by the government of the Republic of Kazakhstan, and the thesis also sets directions for future research in the field.

The proposed extent of the thesis

30 – 40

Keywords

gross domestic product, unemployment, inflation, regional development, world economic crisis

Recommended information sources

- Afxentiou, D., Harris, P., & Kutasovic, P. (2022). The COVID-19 Housing Boom: Is a 2007–2009-Type Crisis on the Horizon? *Journal of Risk and Financial Management*, 15(8), Article 8. <https://doi.org/10.3390/jrfm15080371>
- Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2014). Predatory lending and the subprime crisis. *Journal of Financial Economics*, 113(1), 29–52. <https://doi.org/10.1016/j.jfineco.2014.02.008>
- Baikulakov, S. (2019). An equilibrium level of credits in the economy of Kazakhstan. Bernanke, B. S. (2022). *21st Century Monetary Policy: The Federal Reserve from the Great Inflation to COVID-19*. W. W. Norton & Company.
- Bouchaud, J.-P. (2013). Crises and Collective Socio-Economic Phenomena: Simple Models and Challenges. *Journal of Statistical Physics*, 151(3), 567–606. <https://doi.org/10.1007/s10955-012-0687-3>
- Fuster, A., Lucca, D., & Vickery, J. (2023). Chapter 15: Mortgage-backed securities. <https://www.elgaronline.com/edcollchap/book/9781800375321/book-part-9781800375321-24.xml>
- Martin, R., & Sunley, P. (2020). Chapter 2: Regional economic resilience: evolution and evaluation. <https://www.elgaronline.com/edcollchap/edcoll/9781785360855/9781785360855.00007.xml>
- Robinson, N. (2013). Russian Patrimonial Capitalism and the International Financial Crisis. In *The International Economic Crisis and the Post-Soviet States*. Routledge.
- Sergey, R. (2009). The world economic crisis and its impact on the socioeconomic situation in Kazakhstan. *Central Asia and the Caucasus*, 6 (60), Article 6 (60). <https://cyberleninka.ru/article/n/the-world-economic-crisis-and-its-impact-on-the-socioeconomic-situation-in-kazakhstan>
-

Expected date of thesis defence

2024/25 WS – PEF

The Bachelor Thesis Supervisor

Ing. Jiří Sálus

Supervising department

Faculty of Agrobiological Sciences, Food and Natural Resources

Electronic approval: 30. 11. 2024

prof. Ing. Josef Soukup, CSc.

Head of Institute

Electronic approval: 30. 11. 2024

prof. PhDr. Michal Lošťák, Ph.D.

Authorized to manage

Prague on 30. 11. 2024

Declaration

I declare that I worked on my bachelor's thesis, "Economic Crisis of 2008 and Its Impact on Socio-Economic Development of Chosen Regions in Kazakhstan," by myself. I used only the sources mentioned at the end of the thesis. As the author of the bachelor's thesis, I declare that the thesis does not violate any copyrights.

In Prague on 30.11.2024

Acknowledgment

I would like to thank Mgr. Elena Kuzmenko, Ph.D., and all other persons, for their advice and support during my work on this thesis.

Economic Crisis of 2008 and its Impact on Socio-Economic Development of Chosen Regions in Kazakhstan

Abstract

This thesis investigates the socio-economic impact of the 2008 global financial crisis on Kazakhstan, focusing on the regions of Almaty and Jambyl. It examines the effects on GDP per capita, unemployment rates, and income inequality at the national level, with a comparative regional analysis. Using time series analysis and linear regression models, the study also considers other significant economic shocks, such as the 2015-2016 local crisis and the COVID-19 pandemic. The results reveal that while Kazakhstan recovered from the crisis nationally, the recovery was uneven. Almaty, with its diverse economy, rebounded quickly, whereas Jambyl, a more rural region, experienced prolonged unemployment and slower growth. The thesis highlights the critical role of economic diversification and government interventions in mitigating crisis impacts and emphasizes the need for policies targeting underdeveloped regions to ensure balanced, resilient growth in response to global financial shocks.

Keywords: gross domestic product, unemployment, inflation, regional development, world economic crisis

Hospodářská krize roku 2008 a její dopad na socioekonomický rozvoj vybraných regionů v Kazachstánu

Abstrakt

Tato práce zkoumá socioekonomický dopad globální finanční krize v roce 2008 na Kazachstán se zaměřením na regiony Almaty a Jambyl. Zkoumá dopady na HDP na obyvatele, míru nezaměstnanosti a nerovnost příjmů na národní úrovni se srovnávací regionální analýzou. Pomocí analýzy časových řad a lineárních regresních modelů studie zohledňuje také další významné ekonomické šoky, jako je místní krize 2015-2016 a pandemie COVID-19. Výsledky ukazují, že zatímco Kazachstán se zotavil z krize na národní úrovni, oživení bylo nerovnoměrné. Almaty se svou rozmanitou ekonomikou rychle odskočila, zatímco venkovský region Jambyl zažil prodlouženou nezaměstnanost a pomalejší růst. Diplomová práce zdůrazňuje kritickou roli ekonomické diverzifikace a vládních intervencí při zmírňování dopadů krize a zdůrazňuje potřebu politik zaměřených na zaostalé regiony s cílem zajistit vyvážený a odolný růst v reakci na globální finanční šoky.

Klíčová slova: hrubý domácí produkt, nezaměstnanost, inflace, regionální rozvoj, světová hospodářská krize

Table of Contents

1	Introduction	9
2	Objectives and Methodology	12
2.1	Objectives.....	12
2.2	Methodology	12
3	Literature Review	14
3.1	Crises and Regional Development: Theory	14
3.2	The Great Recession or the Crisis of 2008	17
3.3	Consequences of The Great Recession on Kazakhstan	21
3.4	Kazakhstan prior to the Recession	25
4	Practical Part	28
4.1	Time Series Analysis	28
4.1.1	Kazakhstan.....	28
4.1.2	Almaty	31
4.1.3	Jambyl.....	34
4.2	Linear Regression Analysis	38
4.2.1	Kazakhstan.....	39
4.2.2	Almaty	40
4.2.3	Jambyl.....	42
5	Results and Discussion	44
6	Conclusion	46
7	References	47
8	Appendices	52
8.1	List of Tables	52
8.2	List of Figures	52
8.3	List of Graphs.....	52
8.4	List of Abbreviations	53
8.5	Tables.....	53

1 Introduction

Every country on the globe is a subject to constantly changing business cycle. Each country has its own economic ups and downs. For example, a difficult socio-political situation, natural phenomena (cataclysms, wars, catastrophes), risky decisions in the development of banks and financial institutions, and so on.

Many researchers analyzed the causes and consequences of the financial crisis of 2007-2009 and it was discovered that the majority of developing countries experienced high rates of economic growth in the period, 2001 to 2007 with substantial improvements in indicators of poverty, but with different dynamics for distribution of income. The Commonwealth of Independent States (CIS) represents different influences on economic indicators from crises and various solutions for recovery; therefore, Kazakhstan, is a useful case for study (Verick & Islam, 2010). No country will be able to keep its bar to keep the economy at its peak. Now, the Republic of Kazakhstan is striving to become one of the 30 leading countries in the world by 2050. Among transition economies, Kazakhstan is considered a successful, resource-rich country that sustained robust economic growth, averaging 10 percent per annum during the past decade. Yet government policies aimed at shifting the economy away from the natural resource sector failed to meet their targets.

Kazakhstan is a well-resourced country with nevertheless relatively high poverty levels among both children and adults. In comparison with its immediate, poorer, neighbors Kazakhstan has better indicators of child well-being but, although there have been improvements in key indicators over the past 10 years, there is some way to go to bring these in line with countries with similar gross domestic product (GDP) per capita levels.

The economy of Kazakhstan depends strongly on the situation in foreign markets. When the crisis affected not only individual economic sectors of some countries but also the global financial system as a whole, the only real solution should have been an urgent intervention by the state.

During this period the economy of Kazakhstan enjoyed strong growth rates in real terms (although it slowed down significantly in 2008). GDP per capita grew at an average annual

rate of about 9 percent, and the manufacturing and service sectors rose at an average rate of 9 and 10.1 percent per annum, respectively.

When in the fall of 2008 sources of external borrowing were closed for the republic's banking sector and at the same time - from USD 140 to USD 40- 50 per barrel - hydrocarbon prices fell dramatically, which are one of the dynamic developing industries in the economy of Kazakhstan. In this regard, the State could only change the economy to "manual control". In order to overcome the global crisis, the government of Kazakhstan additionally appropriated a vast amount of money that went to supporting the financial sector, construction, small and medium-sized businesses, agroindustrial complex, and infrastructural development of the country.

Certain steps towards this goal have already been taken to achieve certain structural problems (infrastructure, regional development). However, the economic crisis in 2008 greatly affected the well-being of Kazakhstan (Hausmann et al., 2023). Crises have a negative effect on almost everything and therefore try to fight them. Moreover, it is not possible to guess that there will be a crisis earlier. The problem of economic crises is currently relevant in our country since in a relatively short period of time of 15 years we are in a state of economic crisis, which is either weakening or intensifying.

The reason for the economic crisis is due to:

- The aggressive lending policy of large commercial banks is the reason for the country's high external debt in a fairly short period of time.
- Decrease in the effectiveness of anti-crisis measures of the government of the country during the global financial crisis.
- The openness had previously borne fruit, but during the period of failures of the global financial system, it became the cause of the crisis in Kazakhstan.

However, the economic structure remained unchanged, since the mining, finance, and construction sectors grew at comparable or higher rates. Given the high economic growth, the incidence of poverty declined from 46 percent in 2000 to 12 percent in 2007. Under these conditions, the greatest policy challenge was to manage the growing energy windfalls in such a way that would reduce the economy's dependence on the extractive sector for

generating growth, revenues, and foreign exchange. The recent global economic downturn of 2008-2009 demonstrated that the economy of Kazakhstan is vulnerable to commodity price fluctuations and other external shocks because of its excessive reliance on a narrow production base and highly concentrated export basket.

The 2008 crisis proved to be the most devastating since the global crisis of the 1930s. It was unleashed by US banks through speculation in bank derivatives. In the spring of 2007, when the housing market in the United States began to suffer, many did not expect it to affect other countries of the world so quickly, except for the poor countries, which were in crisis. Subsequently, all countries were in a state of global crisis, and this was a continuation of the crisis. In 2008-2009, the solo crisis sounded more often than other words. As in other countries, the economic crisis in 2008 greatly influenced the well-being of Kazakhstan. Crises have a negative effect on almost everything and therefore try to fight them. Moreover, it is not possible to please for an earlier crisis. The problem of economic crises is currently relevant in our country since in a relatively short period of time of 15 years we are in a state of economic crisis, which is either weakening or intensifying.

By 2008, Kazakhstan's financial sector problems were coinciding with the emergence of a global financial crisis, but the origins of the domestic financial crisis were home-grown. The banks' problems arose from loan portfolios overweighted in domestic real estate projects, not from buying over-risky financial assets in the global market. Kazakhstan's banks had been borrowers in the global financial markets rather than investing in toxic assets coming out of the US financial system. Moreover, although the banking crisis will have substantial economic costs, they are not unbearable because the authorities are well-placed to finance an economic stimulus using the earnings accumulated during the 1999-2008 oil boom.

2 Objectives and Methodology

2.1 Objectives

The objective of the bachelor thesis is to address the subject of world crises based on the example of a selected crisis that is largely known as The Great Recession and that occurred in 2008-2009. The thesis explores the effect of the economic crisis predominantly on the socioeconomic environment of the Republic of Kazakhstan, which is a former Soviet Republic that became independent shortly after the collapse of the union in 1991.

Apart from addressing the nationwide effect of the above-mentioned crisis, the thesis equally focuses on exploring and, subsequently, comparing its effect on two selected neighboring regions – the Almaty region and the Jambyl region, where the first one represents a more economically advanced one, and the second one a generally more lagging-behind one.

2.2 Methodology

The following thesis consists of both inductive and deductive methods. In the literature review, the insight is taken into the premises of The Great Recession with its further development all over various regions of Kazakhstan. In addition, the thesis focuses on the phenomenon itself, as well as on the sequence of events that occurred right after the specified events.

For the quantitative techniques, the bachelor thesis predominantly focuses on two techniques – time series analysis and linear regression analysis. The time series analysis is represented by charts and graphs that present visualizations for the selected socioeconomic indicators reflecting the entire country and the two regions – Jambyl and Almaty.

In the subsequent chapters, the bachelor thesis measures the effect of the selected crisis, compares it with two other major crises (the COVID-19 pandemic and the local economic crisis of Kazakhstan in 2015-2016), and also compares their effects between the Jambyl and Almaty regions. In the discussion, the thesis provides recommendations on how the negative

effects of potential future crises can be mitigated by the government of the Republic of Kazakhstan, and the thesis also sets directions for future research in the field.

3 Literature Review

3.1 Crises and Regional Development: Theory

Most crises tend to share a number of dynamics because specific patterns can be associated with them. First, there is usually some rising tide of tension or stress that builds up the underlying vulnerabilities to the point at which a threshold is reached. This does not last. The first stage of the crisis is usually called the shock phase (Bouchaud, 2013). In this stage, the immediate impacts of the crisis bring about rapid distortions within the structures of the economy, society, or political system. The severity of the crisis may constrain the success of these early interventions, which are characterized by rapid actions with limited goals related to limiting damage. This phase is typified by rapid responses. The impact phase follows the shock phase, which is the period when the larger ramifications spread across linked systems, hence compounding the impacts of the crisis. Resource distribution becomes crucially important in this stage because communities and governments are faced with choices about the prioritization of recovery activities and the allocation of resources. Recovery is normally a lengthy and cumbersome process due to the great capital, policy alteration, and social changes involved (Kapucu & Ozerdem, 2013).

Crises commonly bring about long-term structural changes in the economy. For instance, after a significant economic slump, a state could establish regulating changes with an effort to try to help prevent incidences of events of a similar nature from recurring later on. Recovery and reform might, however, be an asymmetric process for some classes and sectors than others (Spash, 2021). The financial pressure that governments and people face during such a time of economic crisis may call for austerity measures. As much as such policies aim at stabilizing economies, they might put down attempts aimed at pursuing growth and development. Moreover, these crises have implications for society also. Increased unemployment and income inequality Due to this fact, social stress is increased which may sometimes be manifested through an increase in social unrest or a decrease in mental and physical health (Theodore, 2020). This is because economic insecurity puts pressure on individual families. This social tension can worsen a region's prolonged period of economic stagnation and create a self-reinforcing cycle from which it is hard to break.

Many causes of crises are closely related to local characteristics. Economically, for instance, one-industry towns are more likely to be exposed to economic crises in that one industry. Where the healthcare system is weak, health-related crises cannot be managed accordingly; similarly, in a region with weak infrastructure, vulnerability will be higher and the challenges during natural disasters will also be higher (Jessen et al., 2021). Moreover, the scale and intensity of any crisis could go much larger through the preparedness and resilience level of the institution. Such impacts can be mitigated, and the rate of recovery improved, with proactive crisis management strategies coupled with good governance structures and effective public services. Crises that linger could be expected in regions that face political instability, a lack of rule of law, or even corruption. This is because the perceived inefficiency and lack of public confidence in government serve as obstacles to attempts at controlling the issue (Saha & Sen, 2023).

Crises are often known to leave a legacy of inequality in regional development. This might mean that regions lacking the capacity to adapt to crises tend to diverge economically from resilient regions and allow disparities to develop. A financial crisis might be transmitted through capital flight, where investors remove their assets and investments, further reducing development opportunities in the region affected (Martin & Sunley, 2020). It is because of this lack of capital investment that regions cannot invest in much-needed infrastructure, healthcare, and education for long-term growth. Long-term development plans may also be deprioritized while the governments are concentrating on crisis recovery, which would make the region less competitive in a globalized economy. Due to such prioritization, there is a risk that eco-regulatory elements of human capital, technology, and innovation that support the economy in its sustainable growth and resilience will be under-invested (McLennan & Group, 2022).

In fact, the social impact of crises on regional development bears considerable significance. The migration process during crisis situations is usually dictated by the desire of people to seek opportunity or protection elsewhere. The movement of those people can have positive and negative impacts on the environment (Martin, 2021). The migration may have a "brain drain" effect in which qualified persons leave an area; therefore, it lowers the territory's human capital and its capacity for recovery. On the one hand, migration will help alleviate the resource strain in the area that is suffering from crisis. On the other hand, such

migrations may also be burdensome to the areas receiving them, as they are expected to service the needs of a large number of new residents coming in. This can create pressures on social services, housing markets, and job markets. These may be the population transitions likely to induce cultural and economic changes over time, which in turn can redefine regional identities and the socioeconomic regimes within them (Feld, 2021).

Crisis scenarios often reveal failures in governance within an organization and therefore point to shortcomings in crisis management and preparedness and response mechanisms. A government can even face popular outrage for being judged incapable of dealing with crises. Indeed, this may lead to a political power shift or even a policy orientation. One of the ways in which the policy emphasis can occur, where the orientation of resources by governments is made towards disaster preparation and mitigation of crises rather than proactive development initiatives, is through an institutional response that could impact regional development (Parker et al., 2020). These crises sometimes bring positive change since some governments are able to learn from their mistakes and establish policies that will put them in a stronger position to deal with similar situations when they again arise. Similarly, with a view to better preparing the region for any crisis that might occur in the future, regulations for the financial industry could be stepped up, environmental standards could be improved, and healthcare systems could be strengthened. Despite this, such changes often have a reactive character, and in the absence of proper planning, excessive regulation and/or inefficiencies can result, which choke economic activity over time (Boin et al., 2020).

Finally, impacts on regional development from crisis go well beyond the immediate losses associated with actual or direct economic costs they impose. These crises influence the long-term development paths, social cohesion, and integrity of the institutions. Experience does indeed allow for institutional learning and fosters innovation, so it is true that those regions coping well with a crisis do emerge more robust and resilient compared to others that are not (Martin, 2021). Crises can, nevertheless, leave behind scars that may be permanent. Crises, in the process, create cycles of vulnerability and underdevelopment where hosts are too poor or lack the institutional capacity to respond appropriately. Conversely, such challenges will entail a multi-pronged approach to find an effective solution. Such a strategy should also provide for diversification of the economy and investment in resilient infrastructure, other than in any solid social safety nets. In any case,

such policies could work as a shock absorber against the ill winds of crises thus ensuring stability with continuing development, even against future problems (Betts, 2013).

3.2 The Great Recession or the Crisis of 2008

In the decade leading up to 2007, real estate and property values had been rising steadily, encouraging people to invest in property and buy homes. By the early to mid-2000s, the residential housing market was booming. To capitalize on the boom, mortgage lenders rushed to approve as many home loans as they could, including to borrowers with less-than-deal credit. In 2006, house prices began to decline for the first time in decades. At first, the realtors rejoiced. They believed that the overheated real estate market would return to a more stable level (Seiler et al., 2008). They did not consider many factors, such as too many homeowners with bad loans that were approved for mortgages for even 100% or more of the value of the home. A subprime mortgage is a type of loan issued to borrowers with low credit ratings. A prospective subprime borrower might have multiple dings on their credit history or dubious streams of income. In the rush to take advantage of a hot market and low interest rates, many homebuyers took on loans without knowing the risks involved. However, the common wisdom held that subprime loans were safe since real estate prices were sure to keep rising (Agarwal et al., 2014).

Along with issuing mortgages, lenders found another way to make money off of the real estate industry - by packaging subprime mortgage loans and reselling them in a process called securitization. Through securitization, subprime lenders bundled loans together and sold them to investment banks, which, in turn, sold them to investors around the world as mortgage-backed securities (MBS). Some criticized community reinvestment laws that forced banks to invest in mobile. Several Fed studies show that this does not increase the volume of subprime lending. Others blamed Fannie Mae and Freddie Mac for the crisis. For them, the solution would be to close or privatize both institutions. If closed, the housing market will go bankrupt as it guarantees most of the mortgages. Deregulation of financial derivatives is one of the main causes of the financial crisis. Two laws deregulated the financial system. They allowed banks to invest in housing-related derivatives. These sophisticated financial instruments were so profitable that banks took on the risk of borrowing. This instability led to a crisis (Thompson, 2012).

Eventually, investment banks started repackaging and selling mortgage-backed securities on the secondary market as collateralized debt obligations (CDOs). These financial instruments combined multiple loans of varying quality into one product, divided into segments, or tranches, each with its own risk levels suitable for different types of investors (Giacomini, 2023).

Investment banks and institutional investors around the world borrowed significant sums at low short-term rates to buy CDOs. And because the financial markets seemed stable on the whole, investors felt secure about taking on more debt. The Financial Services Modernization Act of 1999 (the Gram-Leach-Bliley Act) allowed banks to invest their deposits in derivatives (Abdel-Khalik, 2016). Bank lobbyists said changes were needed to compete with foreign companies. They promised to invest only in low-risk securities to protect their clients. Banks have broken that promise by pursuing lucrative derivatives markets. The Future Commodities Modernization Act exempts financial derivatives from regulatory oversight. He also rejected all government regulations. The large banks had the resources to manage these complex derivatives (Chadwick, 2017).

To make matters even more complicated, banks used credit default swaps (CDS), another financial derivative, to insure against defaults on CDOs. Banks and hedge funds started buying and selling swaps on CDOs in unregulated transactions. Also, because CDS transactions didn't show up on institutions' balance sheets, investors couldn't assess the Like corporate bonds and other forms of debt, MBS and CDOs required the blessing of credit rating agencies in order to be marketed (Mengle, 2007). Among these products, Mortgage-Backed Securities (MBS) have had the greatest impact on the home market. The profitability of MBS has led to an increase in the demand for the mortgages on which they are based. The bank cut off mortgage loans and sold them in instalments, which made the value of derivatives undervalued. Hedge funds and other financial institutions around the world held mortgage-backed securities but were also included in mutual funds, corporate assets, and pension funds (Fuster et al., 2023).

After staying low throughout the early 2000s, interest rates began to rise starting in 2004 in response to an overheating economy and fears of inflation. In mid-2004, the federal funds rate was 1.25%. By mid-2006, the interest rate was 5.25%. By mid-2006, home prices were peaking, and the market was slowing down. When supply started to outpace demand, home

prices spiralled. The combination of high interest rates and falling home prices made it extremely difficult for buyers to make payments on their homes. As a result, defaults on subprime mortgages shot up. Loan after the loan became worthless (Brooks et al., 2012).

Poor pension funds bought these risky assets because they believed they would be protected by an insurance product called standard credit swaps. American Insurance Group (AIG) sold these swaps and did not have enough cash flow to cover all the swaps when the value of the derivatives declined. In 2007, banks began to panic when they realized they needed to take losses and stop lending to each other. They didn't want other banks to provide useless mortgages, and as a result, the cost of an interbank loan called Libor rose. The Fed began to provide liquidity to the banking system through the mechanism of urgent auctions, but this was not enough (Schwarcz & Schwarcz, 2014). The 2008 financial crisis calendar kicked off in March 2008, when investors sold shares in investment bank Bear Stearns because it had too many assets. Bear approached JP Morgan Chase to bail him out. But the Fed had to smooth the deal with a \$30 billion guarantee. In the summer of 2008, things got worse on Wall Street. Congress allowed the Treasury Secretary to take control of Fannie Mae and Freddie Mac, the \$187 billion mortgage company. Dollars. On September 16, 2008, the Fed provided \$85 billion in financing to AIG. In October and November, The Fed and Treasury restructured their bailouts. This brings the total to \$182 billion. By 2012, when the Treasury Department sold its latest AIG stake, the government made a profit of \$22.7 billion. On September 17, 2008, the financial crisis led to massive withdrawals from the money markets and businesses left with excess cash. To generate income overnight banks, use that money to borrow short-term loans. During this time, companies transferred \$172 billions of records from money market accounts to safer Treasury bonds. When a country's money market account goes bankrupt business, and the economy will stop. The crisis required massive government intervention. Three days later, Treasury Secretary Henry Paulson and Fed Chairman Ben Bernanke submitted \$700 billion in aid to Congress. Their quick response helped disrupt the flight. But Republicans don't want bank bailouts (Gorton, 2017).

So, they blocked the account for two weeks. They approved the bill on October 1, 2008, when stock markets around the world nearly collapsed. Although the exact causes of the financial crisis are a matter of dispute among economists, there is general agreement

regarding the factors that played a role (experts disagree about their relative importance) (Imtiaz Mazumder & Ahmad, 2010).

First, the Federal Reserve (Fed), the central bank of the United States, having anticipated a mild recession that began in 2001, reduced the federal funds rate (the interest rate that banks charge each other for overnight loans of federal funds—i.e., balances held at a Federal Reserve bank) 11 times between May 2000 and December 2001, from 6.5 percent to 1.75 percent (Bernanke, 2022). That significant decrease enabled banks to extend consumer credit at a lower prime rate (the interest rate that banks charge to their “prime,” or low-risk, customers, generally three percentage points above the federal funds rate) and encouraged them to lend even to “subprime,” or high-risk, customers, though at higher interest rates. Consumers took advantage of the cheap credit to purchase durable goods such as appliances, automobiles, and especially houses. The result was the creation in the late 1990s of a “housing bubble” (a rapid increase in home prices to levels well beyond their fundamental, or intrinsic, value, driven by excessive speculation) (Turner, 2010).

Second, owing to changes in banking laws beginning in the 1980s, banks were able to offer subprime customers mortgage loans that were structured with balloon payments (unusually large payments that are due at or near the end of a loan period) or adjustable interest rates (rates that remain fixed at relatively low levels for an initial period and float, generally with the federal funds rate, thereafter). As long as home prices continued to increase, subprime borrowers could protect themselves against high mortgage payments by refinancing, borrowing against the increased value of their homes, or selling their homes at a profit and paying off their mortgages (Zywicki & Adamson, 2009). In the case of default, banks could repossess the property and sell it for more than the amount of the original loan. Subprime lending thus represented a lucrative investment for many banks. Accordingly, many banks aggressively marketed subprime loans to customers with poor credit or few assets, knowing that those borrowers could not afford to repay the loans and often misleading them about the risks involved. As a result, the share of subprime mortgages among all home loans increased from about 2.5 percent to nearly 15 percent per year from the late 1990s to 2004 (Afxentiou et al., 2022).

Third, contributing to the growth of subprime lending was the widespread practice of securitization, whereby banks bundled together hundreds or even thousands of subprime

mortgages and other, less-risky forms of consumer debt and sold them (or pieces of them) in capital markets as securities (bonds) to other banks and investors, including hedge funds and pension funds. Bonds consisting primarily of mortgages became known as mortgage-backed securities, or MBSs, which entitled their purchasers to a share of the interest and principal payments on the underlying loans. Selling subprime mortgages as MBSs was considered a good way for banks to increase their liquidity and reduce their exposure to risky loans while purchasing MBSs was viewed as a good way for banks and investors to diversify their portfolios and earn money. As home prices continued their meteoric rise through the early 2000s, MBSs became widely popular, and their prices in capital markets increased accordingly (Calomiris, 2009).

3.3 Consequences of The Great Recession on Kazakhstan

The Global Economic Crisis began to affect the economy of Kazakhstan in August 2007, and initially, the financial and construction sectors suffered. It hit Kazakhstan much earlier than most other countries, with the first effects being felt in the autumn of 2007 (Ruziev & Majidov, 2013).

Figure 1. Map of the Kazakhstan.



Source: Worldometer, 2024

According to the Statistics Agency of the Republic of Kazakhstan, the unemployment rate in 2008 compared to the previous year decreased from 7.3% to 6.6%. But already in the first quarter of 2009, it rose again to 6.9%. The adoption of the roadmap program, aimed at creating temporary jobs in the regions, prevented a further increase in unemployment rates and stopped it at 6.3%. In the past decade, thanks to the growth of the economy, the number of employed people in Kazakhstan has been constantly increasing, and in 2009 it reached 7.9 million people (Karimova, 2009). Used to real GDP growth of between 9.8% and 13.5% between 2000 and 2006 thanks to a wave of foreign direct investment, real GDP growth fell to 8.9% before collapsing to 3.2% in 2008 and 1.2% in 2009. But by 2010, real GDP growth had returned to 7% and is set to remain between 6% and 7% for the foreseeable future, with the World Bank estimating 5.5% in 2012. Of these, 2.7 million are self-employed (the self-employed). As a result, unemployment in the countryside turned out to be lower than in the city, because the statistics consider unemployed villagers to be self-employed (Hausmann et al., 2023).

In 2008, real wage growth was 2.5%, down from 16.1% in 2007. The median salary across all sectors of the economy was 60,734 (\$505 average annual rate). At the same time, disparities in monthly nominal wages are increasing between sectors of the economy. Thus, in December 2008, wages in the financial sector rose to 169,363 (\$ 1408), while in education they reached 37,597 (\$ 312), and in agriculture to 37,307 (\$ 310). In 2009, the average salary in all sectors of the economy increased by 11.2% to 67,530 tenge, while it declined in dollar terms due to the depreciation of the tenge to \$458.

Statistics do not reflect the impact of the crisis on the poor. The proportion of the population with incomes below the subsistence level (12,364 tenge, or \$103) in the third quarter of 2008 was 16.2% and fell sharply in the fourth quarter to 8.8%. In the countryside, the proportion of the population with incomes below minimum subsistence was 23.3% in the third quarter of 2008, and 10.8% in the fourth. In 2009, about 14% of the rural population had incomes below the subsistence level.

The banking sector had accumulated large external foreign debt, amounting to 44 % of GDP. In contrast, external debt of the public sector amounted to only 2% of GDP in 2007 (National Bank of Kazakhstan). Kazakhstan's crisis was above all a banking crisis. With rampant growth to 2007, western banks were more than willing to lend to their Kazakh

counterparts, helping to fuel a dramatic real estate bubble. As the real estate market and international funding collapsed, Kazakhstan's core financial institutions faced significant problems and were forced to apply for government support. In Kazakhstan, however, there was a novel twist in that the private sector creditors were forced to share the pain.

The consequences of these problems are a substantial decline in lending from commercial banks to non-oil sectors of the economy. The companies in the construction sector depended heavily on loans and inflating prices for real estate, and faced stagnation, and bankruptcy. However, due to favorable world prices for oil, the decline in growth of real GDP was not as severe in 2007. Later the country experienced much lower rates of growth, 3.3% and 1.8% for 2008 and 2009, respectively, despite the slow rate of real GDP growth poverty indicators declined in this period (Kalyuzhnova & Patterson, 2016).

The housing sector led the financial crisis and the downturn in broader economic activity. Residential investment peaked in 2006, as did employment in residential construction. The overall economy peaked in December 2007, the month the National Bureau of Economic Research recognizes as the beginning of the recession. The decline in overall economic activity was modest at first, but it steepened sharply in the fall of 2008 as stresses in financial markets reached their climax. From peak to trough, US gross domestic product fell by 4.3 percent, making this the deepest recession since World War II. It was also the longest, lasting eighteen months. The unemployment rate more than doubled, from less than 5 percent to 10 percent (Ruziev & Majidov, 2013).

In response to weakening economic conditions, the FOMC lowered its target for the federal funds rate from 4.5 percent at the end of 2007 to 2 percent at the beginning of September 2008. As the financial crisis and the economic contraction intensified in the fall of 2008, the FOMC accelerated its interest rate cuts, taking the rate to its effective floor – a target range of 0 to 25 basis points – by the end of the year. In November 2008, the Federal Reserve also initiated the first in a series of large-scale asset purchase (LSAP) programs, buying mortgage-backed securities and longer-term Treasury securities. These purchases were intended to put downward pressure on long-term interest rates and improve financial conditions more broadly, thereby supporting economic activity (Bernanke, 2022). The downturn in the housing sector of the United States accelerated during 2007, and the

prospects for 2008 remain bleak. The housing downturn impacted financial markets from mid-2007, as the debacle in the sub-prime mortgage loan sector triggered full-blown global financial turmoil. Although sub-prime mortgages are a relatively small fraction of the total mortgage market and an even smaller fraction of the total credit market, a complex financial system with overstretched leverage, lack of transparency, and inadequate regulation served to spread and multiply the risk beyond the subprime market. By the end of 2007, most housing indicators had dropped to their lowest level in a decade. Kazakhstan faced the first wave of financial crisis and problems in the construction sector. The construction boom in the capital and in a number of oil and gas-producing regions until 2007 was facilitated by the rapid growth of credit: from 2003 to 2007, the ratio of bank loans to GDP increased by 37% to 62% in 2007 (excluding intra-group lending). The total external debt to GDP ratio increased from 73% to 95% in 2000-2008 (from \$13 billion to \$108 billion). With the onset of the global financial market crisis in the summer of 2007, the private sector faced difficulties in servicing external debt. The lack of liquidity is beginning to affect the pace of industrial growth. The decline in world market prices for hydrocarbons and minerals began in late 2008 - early 2009 seriously threatening the stability of the Kazakh economy: the decrease in budget revenues affected the implementation of social programs. Macroeconomic indicators fell sharply in 2008-2009.

In April 2009, the 2009-2011 budget was revised due to the significant decrease in revenue and the need for additional funds for anti-crisis measures. The republican budget revenue was reduced by 20% (about \$2.5 billion) in 2009, and spending by \$150 million. The state made great efforts to save the country's financial system. In February 2009, the National Bank devalued the tenge by 23% (150 tenge per dollar plus or minus 5 tenge), lowered the refinancing rate to 9.5%, and switched to a floating exchange rate policy. State intervention in the banking system was direct - contributions to authorized capital and financing in the form of deposits from the Samruk-Kazyna National Property Fund - and indirect (Corporate Deposit Administration). Thanks to government actions to improve the banking system in 2007-2009. The volume of commercial bank debts decreased (at the end of 2009) from 46 billion US dollars to 30 billion US dollars, and the share of external debt in the total volume of liabilities of the Kazakh banking system decreased to 33.6% (Sherimova et al., 2022).

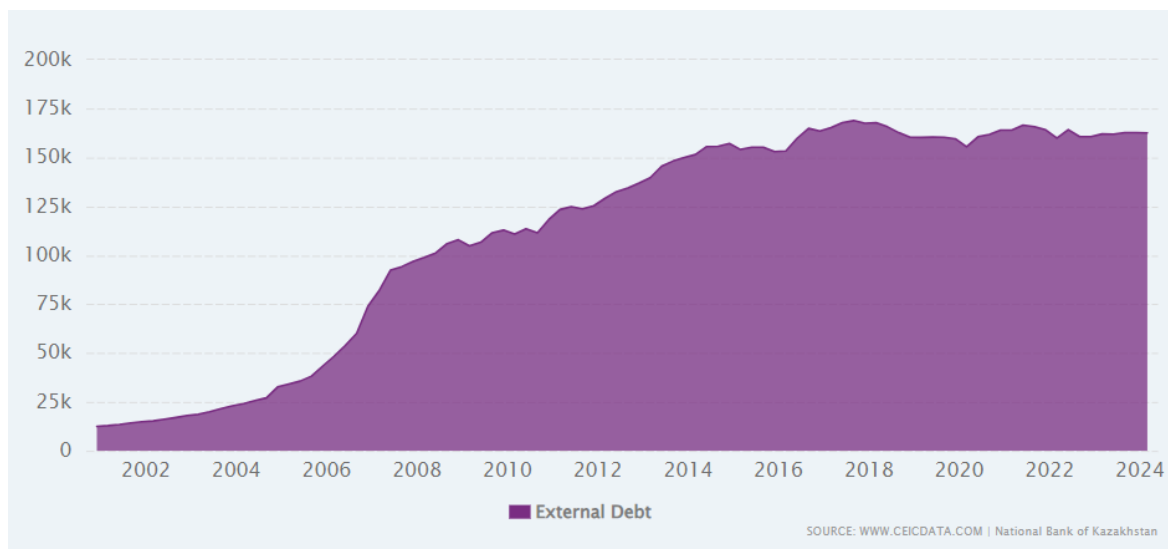
3.4 Kazakhstan prior to the Recession

By the mid-1990s, Kazakhstan was seen as having one of the region's most forward-looking economic policies, with a focus on solid macroeconomic performance and on creating a favourable environment for private sector development. Despite the country's relative stability and incipient economic growth, the economy faced an important blow during Russia's 1998 financial crisis. Not only did its exports collapse with the fall in demand from one of its major trading partners but also, with the depreciation of the rouble, it faced an important loss in competitiveness in other export markets. Additionally, cheap Russian goods were flowing into the economy, harming domestic industries. Despite widespread capital outflows in the region, Kazakhstan still managed to attract some foreign investment, as there was a relatively high level of trust in the government's solid economic policies (Robinson, 2013). Nevertheless, there was an enormous downward pressure on the tenge, including through a deteriorating balance of payments. 1998 was a year of negative economic growth. All these factors made the devaluation of the tenge inevitable and necessary, as pegging it was hurting exporters and domestic industries.

In April 1999, the tenge lost almost 40% of its value. Authorities put in place temporary trade and capital controls to minimize impacts on the real economy. After the low interest rate on loans in the US led to a global crisis; Kazakhstan felt the first signs of the global crisis at the beginning of 2007. At that time, opportunities for construction were expanding in Kazakhstan. However, fearing that the same situation in the US would happen again in Kazakhstan, foreign banks stopped lending to Kazakh banks. In this regard, their shares began to fall in price. This led to the debt of the Bankovskoysetor up to 40 billion dollars. Thus, the global liquidity shortage began to affect not only the banking economy but also the sector of the economy of the Republic of Kazakhstan (Sergey, 2009).

At the time of the beginning of the 2007 crisis in August, Kazakhstan's external debt increased to 96.4 billion dollars, while the republic's GDP was more than 100 billion dollars. According to the First Credit Bureau (PCB) of the National Bank of the Republic of Kazakhstan (Fig. 2).

Figure 2. External Debt of the Kazakhstan (2000 - 2024)



Source: CEIC, 2024

The credit system in Kazakhstan affects 42% of the economically active population (3,455 thousand people). In the field of credit Legal entities, Only 10% of companies have a credit history.

According to the PCB, there is no credit crunch in the republic seen in the credit industry. According to the PCB, there are about 14 loans per legal entity on average. There are companies with up to 600 credit points (Baikulakov, 2019). Still, unmet demand for credit money, restricted by banks' restrictive lending policies. This because of negative expectations of economic development, uncertain prospects for the real estate market; a decrease in the total solvency of borrowers; Risks in relation to the value of the guarantee and its revaluation; and Growth in credit risk related to economic sectors. In the category of hazardous industries, besides construction, building materials production and trade, agriculture, oil, gas, and minerals industry retail falls further demand for mortgage loans and limited demand for consumer credit. The population is in trouble of existing loan service.

The Alliance Bank repaid the external debt for the year 2008 in the amount of \$1.02 billion in full. The bank has complete confidence of the remaining payments on external loans for the years 2009 and 2010 and it will be implemented on schedule. BTA has also fully fulfilled its external obligations. He has the resources to make regular payments in 2009 and 2010 in the amount of 1.7 and 1.9 billion dollars, respectively.

The situation is similar in Narodny and Eurasia banks. At the same time, leaving the financial market for some banks in the future is quite possible. The question is still open about monopoly in this field. Excessive concentration of this type of activity increases financial risks to State Security. It cannot be supplied by those who just aim for super profits.

Achieve the rapid development of the construction sector with excessive support from banks has exacerbated the problems of the national economy associated with an overheated housing market. In a short period, the residential community has become one of the most residential communities. It is broad, diverse, and dynamic, with great social impact. For the period from 2003 to 2007 there were 213 thousand apartments were built, of which only in 2007 - 74.6 thousand. The number of construction workers was 518 thousand people, and their average monthly salary was 55.4 thousand tenge. From then on, the government continued to implement gradualist policies, which allowed it to regain a firm footing (Azhibuzhayeva et al., 2021).

4 Practical Part

4.1 Time Series Analysis

4.1.1 Kazakhstan

The first sub-chapter of the time series analysis proceeds to the analysis of the national socio-economic indicators for the whole country. The selected indicators are identical for all important analyses and the level of the analysis, and they are the gross domestic product per capita with 2015 constant \$ chosen as the price level (to have the values already adjusted to inflation), the unemployment rate in %, and the Gini index in points. Effectively, the chosen indicators provide valuable information first about the level of economic development, then about overall employment, and, finally, about the degree to which income is evenly distributed. Table 1 presents the data used in this chapter.

Table 1. Socio-economic data for Kazakhstan in 2001-2023.

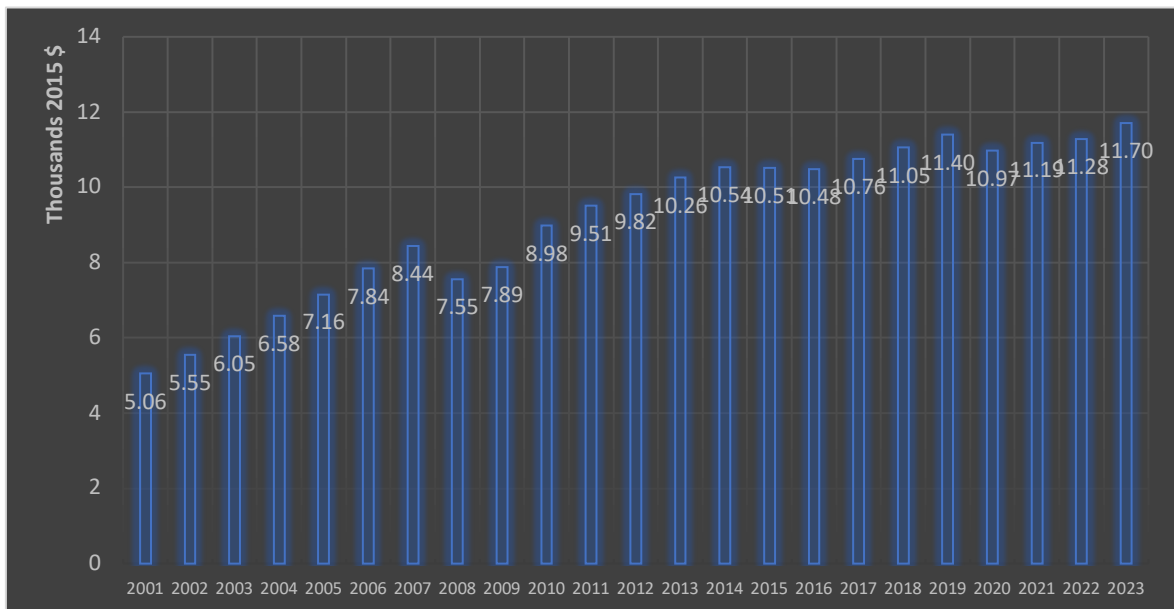
Year	GDP per capita, 2015\$	Unemployment, %	Gini Index
2001	5055.31	10.43	37
2002	5550.50	9.33	36
2003	6046.33	8.78	34.8
2004	6580.88	8.4	33.7
2005	7155.34	8.13	31.8
2006	7837.63	7.79	39.8
2007	8438.10	7.26	30.2
2008	7554.82	8.45	30.1
2009	7887.54	9.24	28.5
2010	8979.33	5.77	28.2
2011	9506.73	5.39	28
2012	9823.69	5.29	28
2013	10264.30	5.2	28.2
2014	10539.04	5.06	27.1
2015	10510.77	4.93	27
2016	10476.35	4.96	26.8
2017	10758.52	4.9	27.2
2018	11053.36	4.85	27.5
2019	11402.76	4.8	27.8

2020	10974.24	8.95	28
2021	11186.28	7.98	28.7
2022	11283.42	4.86	29.2
2023	11700.84	4.847	28.3

Source: The World Bank, 2024

Graph 1 demonstrates the development of the GDP per capita of Kazakhstan in 2001-2023.

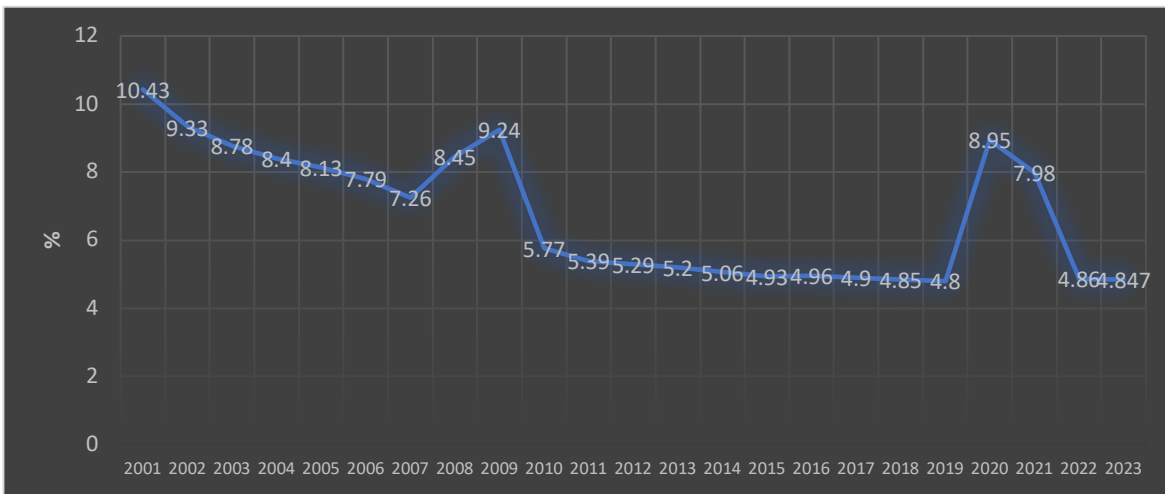
Graph 1. GDP per capita in 2001-2023 in Kazakhstan.



Source: own analysis of The World Bank, 2024

Seemingly, the crisis that hit the economy of Kazakhstan the most was The Great Recession, which is the focus of the bachelor thesis. On the other hand, the COVID-19 pandemic and the recession of 2015-2016 also had a negative effect on the rate of economic development in the Republic of Kazakhstan. Apart from those aspects, it is possible to note a positive rate of economic development, where over 23 years, the economy succeeded in increasing the level of development by two times at the end of the analyzed time series. Graph 2 captures the pattern of the unemployment rate in Kazakhstan in 2001-2023.

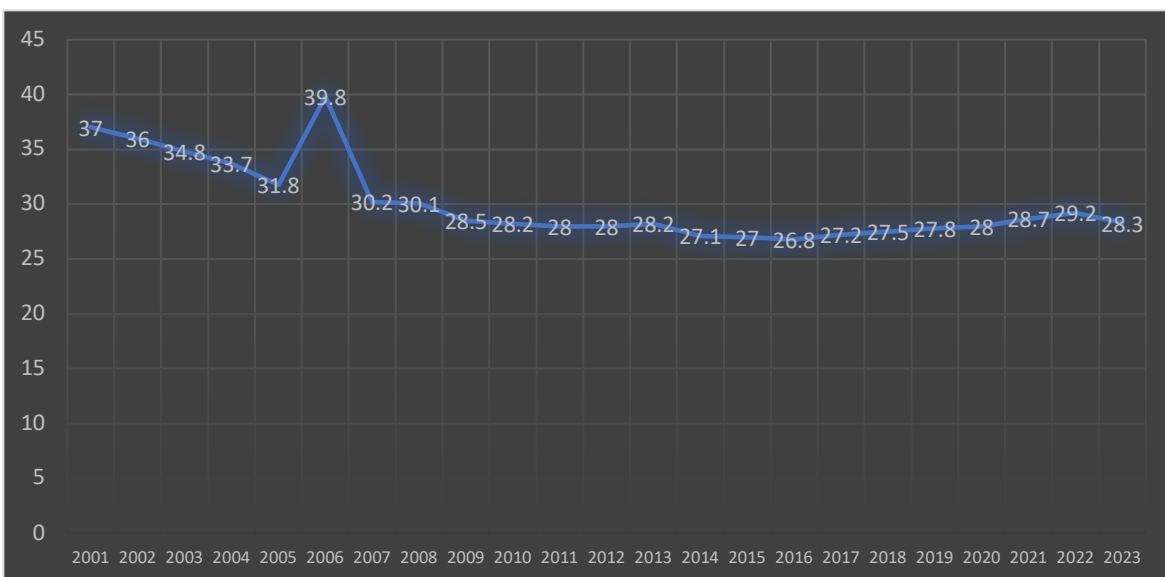
Graph 2. Unemployment in Kazakhstan in 2001-2023.



Source: own analysis of The World Bank, 2024

Unemployment expectedly rose quite high during the crises of 2008-2009 and during the COVID-19 pandemic. Overall, the pattern of the unemployment rate in the analyzed 23 years was positive since the average national unemployment was quite rapidly decreasing, until eventually reaching the level of approximately 5 percent, which is quite an acceptable value. Graph 3 presents the chart of income inequality (depicted by the Gini index) in Kazakhstan from 2001-2023.

Graph 3. Gini index in Kazakhstan in 2001-2023.



Source: own analysis of The World Bank, 2024

The higher the Gini index gets, the worse is the situation with the overall income distribution in a country, region, or a selected locality. In this case, there are two visible trends – the first trend was identified between 2001 and 2016 when income equality was seemingly improving as the direction of the change was a decrease in the indicator's value. After 2016, the situation changed, and income inequality started to rise. Seemingly, the crisis of 2008-2009 was a very serious blow to the country's income equality as inequality rose quite drastically.

According to the analysis of the three indicators, it is possible to highlight a clear negative effect of the main crisis of interest, as well as other identified crises on the socio-economic landscape of the Republic of Kazakhstan.

4.1.2 Almaty

The subsequent sub-chapter provides an overview of the very same set of indicators but for Almaty oblast or Almaty region, which is one of the most economically active and advanced ones, constantly located at the top of Kazakhstan's economic hierarchy. Table 2 presents the data used in this part of the analysis.

Table 2. Socio-economic data for Almaty region in 2001-2023.

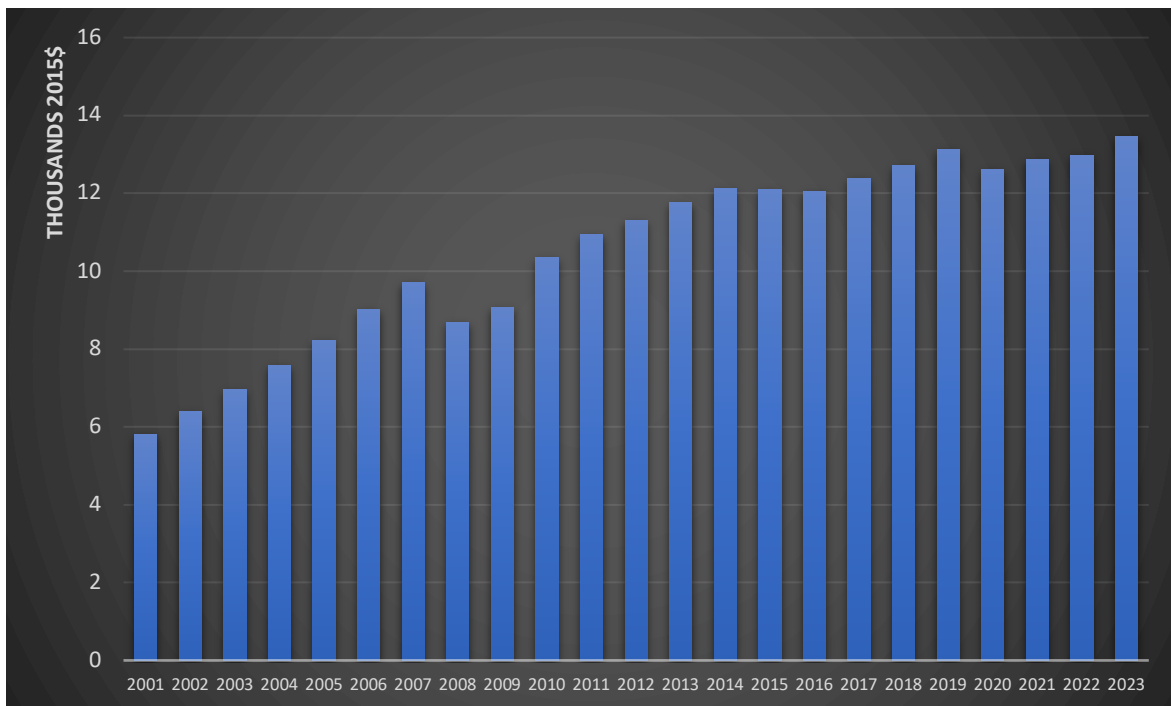
Year	GDP per capita, 2015\$	Unemployment, %	Gini Index
2001	5813.61	8.34	40.7
2002	6383.08	7.46	39.6
2003	6953.28	7.02	38.3
2004	7567.01	6.72	37.1
2005	8228.64	6.5	35
2006	9013.27	6.23	43.8
2007	9703.82	5.81	33.2
2008	8688.04	6.76	33.1
2009	9060.67	7.39	31.4
2010	10346.23	4.62	31
2011	10932.74	4.31	30.8
2012	11296.24	4.23	30.8
2013	11758.95	4.16	31
2014	12119.90	4.05	29.8
2015	12087.39	3.94	29.7

2016	12047.80	3.97	29.5
2017	12372.30	3.92	30
2018	12711.36	3.88	30.3
2019	13113.18	3.84	30.6
2020	12620.37	7.16	30.8
2021	12864.23	6.38	31.6
2022	12975.93	3.89	32.1
2023	13455.97	3.88	31.1

Source: Kazstat, 2024

4. The first indicator that is observed is the GDP per capita, which can be found in Graph

Graph 4. GDP per capita in Almaty region in 2001-2023.

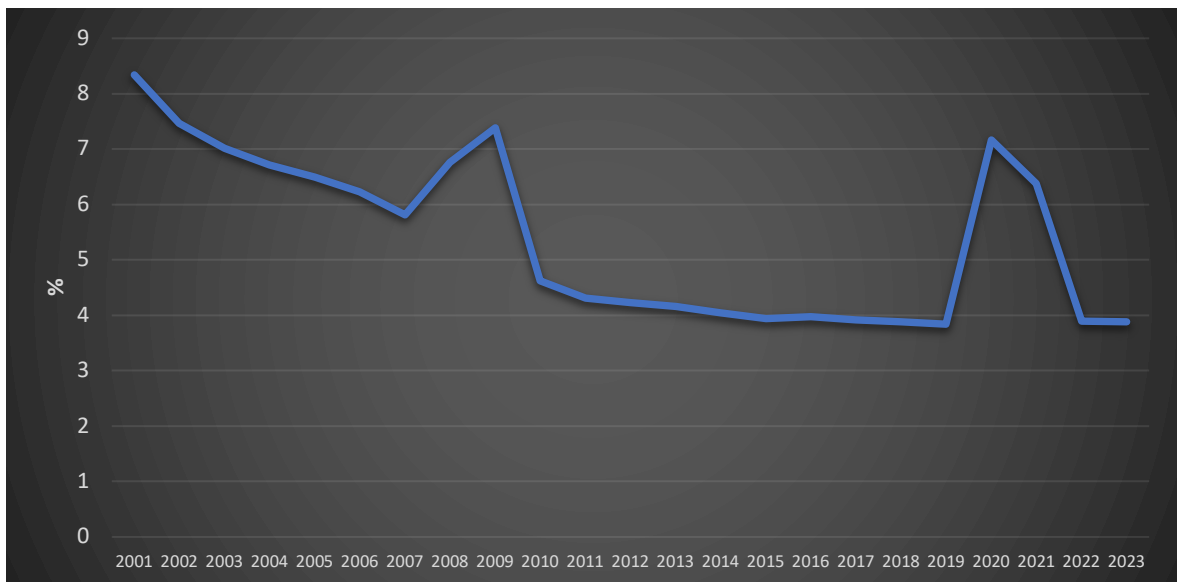


Source: own analysis of Kazstat, 2024

The GDP per capita of the Almaty region was visibly higher than the Kazakh average figure, which is visible when comparing the level of the indicator between Graph 1 and Graph 4. However, there are clear similarities – the GDP per capita was constantly increasing for the Almaty region as well, and the economic development was negatively hit by The Great Recession in 2008. Subsequently, there was a recovery in 2009 and in 2010 the region managed to return to the pre-crisis levels of economic development. The effect of the

remaining crises is seemingly less significant than the one happening in 2008. Graph 5 presents the development of the unemployment rate in Almaty region.

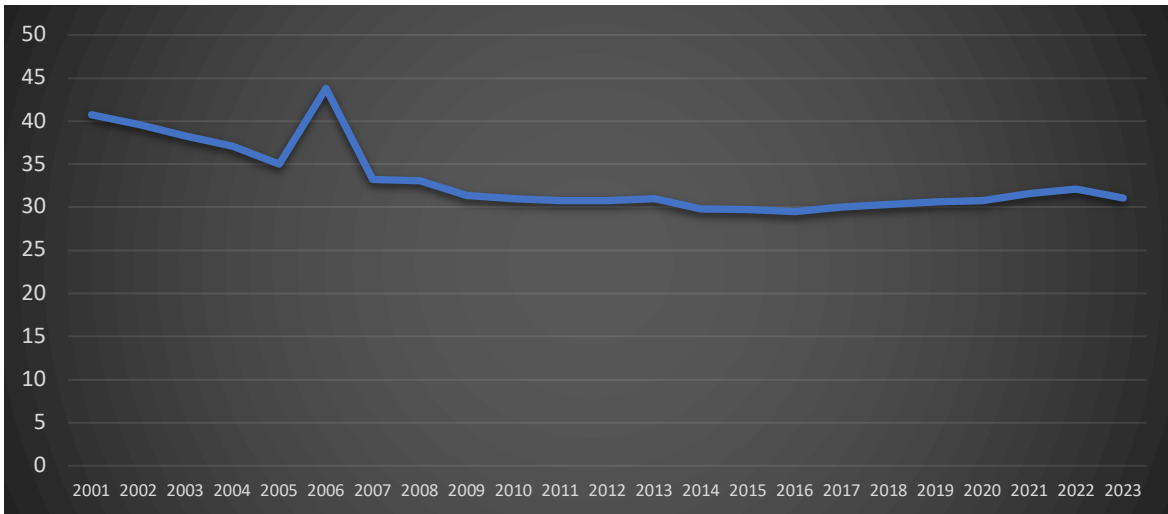
Graph 5. Unemployment in Almaty region in 2001-2023.



Source: own analysis of Kazstat, 2024

Unemployment in Almaty was visibly lower than in the whole country, which is visible in the annual level of the indicator that is smaller than the one in Graph 2. The resulting level of unemployment by the end of the studied period was on the level of 4 percent, which is one percentage point lower than for the whole country. There are two major surges of unemployment – in 2008-2009, and in 2020-2021, which confirms the suggestion that crises negatively influenced the socio-economic development of Almaty region. The effect of the COVID-19 pandemic is seemingly higher, which might be explained by the nature of the turmoil, where people were locked in their houses. Graph 6 demonstrates the final variable, the Gini index in 2001-2023 for the Almaty region.

Graph 6. Gini index in Almaty region in 2001-2023.



Source: own analysis of Kazstat, 2024

A similar pattern is identified for the Gini index, which shows that Almaty's income distribution was badly hit by the crisis of 2008, while there was no similar dynamic for the crises of 2015-2016 and 2020. At the same time, unlike the earlier discussed indicators, the situation with income inequality in Almaty is worse than the situation with the GDP per capita and unemployment on the national level. This is an expected outcome in an economically advanced region, where disparities often manifest themselves stronger than in peripheries and rural regions.

4.1.3 Jambyl

Jambyl region is the second selected region, which serves as a comparative basis for the Almaty region. Unlike Almaty, Jambyl is substantially more rural and less economically advanced, so it provides a series of valuable information regarding the difference in the effect of the analyzed crisis and additional economic recessions identified in the thesis. As an additional motivation supporting the choice of Jambyl, the two regions are considered neighboring ones, so this provides more valuable insights. Table 3 presents the data for the Jambyl region.

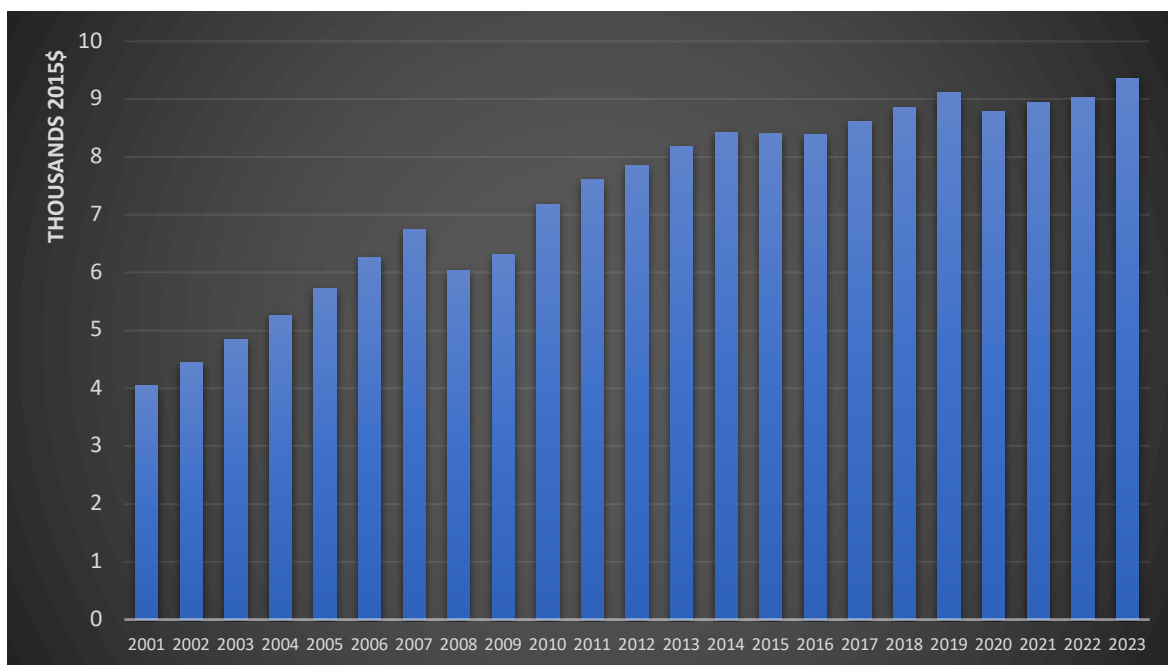
Table 3. Socio-economic data for Jambyl region in 2001-2023.

Year	GDP per capita, 2015\$	Unemployment, %	Gini Index
2001	4044.25	12	33.3
2002	4440.40	10.73	32.4
2003	4837.06	10.1	31.3
2004	5264.70	9.66	30.3
2005	5724.27	9.35	28.6
2006	6264.27	8.96	35.8
2007	6750.48	8.35	27.2
2008	6043.86	9.72	27.1
2009	6309.63	10.62	25.7
2010	7183.46	6.63	25.4
2011	7605.38	6.2	25.2
2012	7858.95	6.08	25.2
2013	8182.96	5.98	25.4
2014	8431.23	5.82	24.4
2015	8408.62	5.67	24.3
2016	8381.08	5.7	24.1
2017	8606.84	5.63	24.5
2018	8846.85	5.57	24.8
2019	9122.21	5.52	25
2020	8779.39	10.29	25.2
2021	8949.83	9.18	25.8
2022	9026.74	5.59	26.3
2023	9360.67	5.57	25.5

Source: Kazstat, 2024

Graph 7 presents the GDP per capita development in Jambyl region in 2001-2023.

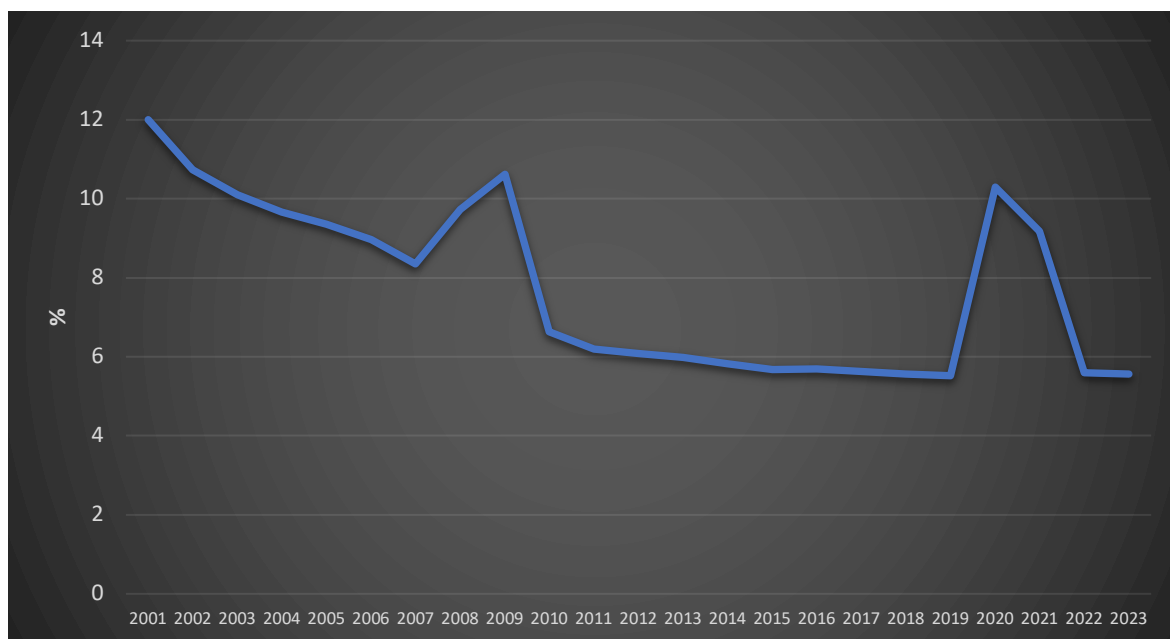
Graph 7. GDP per capita in Jambyl region in 2001-2023.



Source: own analysis of Kazstat, 2024

Like Almaty, Jambyl has a different value for the GDP per capita than the national level. However, unlike the earlier discussed region, the average level of economic development in Jambyl is lower than the national level, which indicates that Jambyl can be viewed as a region significantly lagging behind Almaty and also the national level. When it comes to the specific aspects of the development, a similar tendency is identified – it was steadily increasing over time and rose by more than 2 times over the 23 years. When it comes to the response to crises, The Great Recession visibly had an extremely strong negative effect on the economic development in the region, while the remaining two crises did not really undermine the development but prevented it from entering a faster path of improving the prospects of economic development. Graph 8 proceeds to the unemployment rate in Jambyl in 2001-2023.

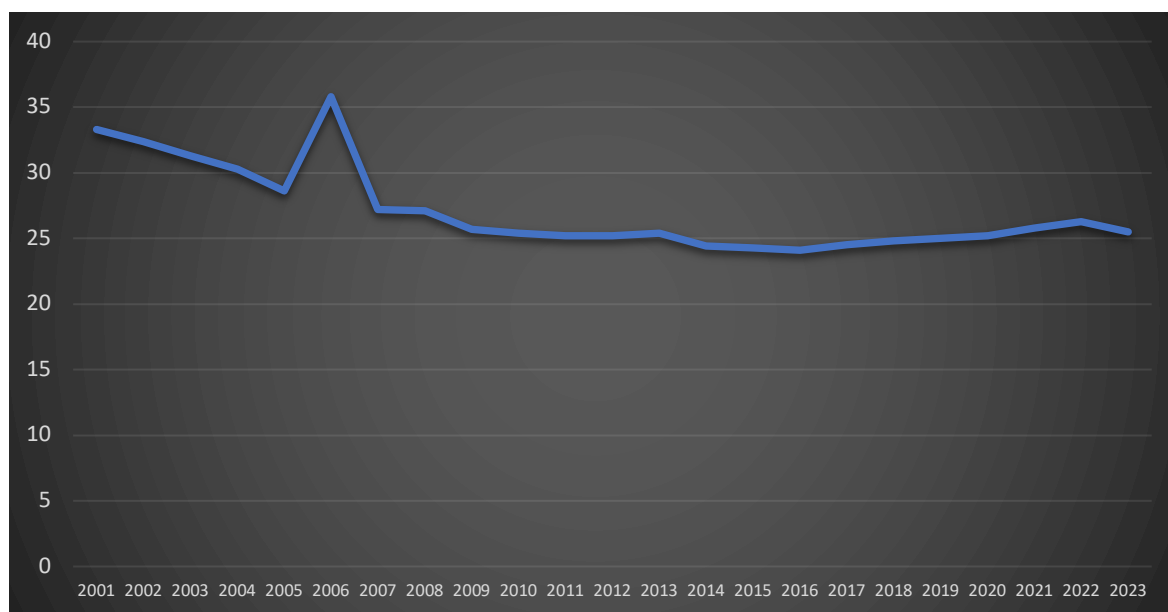
Graph 8. Unemployment in Jambyl region in 2001-2023.



Source: own analysis of Kazstat, 2024

Unemployment is on average higher in Jambyl than at the national level, which is an expected conclusion given the rural nature of the region, as well as rather harsh weather conditions (extremely hot summer and extremely cold winter) that prevent the region from developing its agrarian sector in a beneficial for the society way. From the point of view of the development in time, the region succeeded in lowering the unemployment rate but additional effort is still needed to put it on the same level as the national level. When it comes to the indicator's response to the discussed crises, The Great Recession had a devastating effect on employment in the region, as well as the COVID-19 pandemic in 2020. Graph 9 proceeds to the final time series chart – Gini index in Jambyl in 2001-2023.

Graph 9. Gini index in Jambyl region in 2001-2023.



Source: own analysis of Kazstat, 2024

Gini is seemingly lower in Jambyl, which suggests that despite the region’s rather lagging behind economy, it has a better situation with income distribution than the economically advanced Almaty region, and better than the national level of income distribution. However, a similar concerning tendency is identified in the region’s income equality development over time, where a reversed trend is identified in post-2016. For the crises’ effect, The Great Recession is pretty much the only crisis that resulted in a major hike in income inequality in Jambyl.

4.2 Linear Regression Analysis

The projection of time series plots is then complemented by the linear regression analysis that measures the effect of different factors on the GDP per capita in Kazakhstan, Almaty, and Jambyl. The models that are estimated are different for different levels of regional hierarchy, but they all follow the same structure shown in Equation 1:

$$GDP_t = \beta_0 + \beta_1 U_t + \beta_2 GINI_t + \beta_3 CR1_t + \beta_4 CR2_t + \beta_5 CR3_t + \varepsilon_t \quad (1)$$

GDP is the GDP per capita in 2015\$, U is the unemployment rate in %, GINI is the Gini index in points, CR1 is the binary dummy variable depicting The Great Recession (2008-2009), CR2 is the binary dummy variable depicting the shock of 2015-2016, CR3 is the binary dummy variable depicting the COVID-19 pandemic of 2020. Tables 7, 8, and 9 in the list of appendices present the data used in the estimation. Microsoft Excel is the tool for the estimation, and before the estimation takes place, the multicollinearity is successfully verified in all 3 cases, where it was absent in each.

4.2.1 Kazakhstan

The estimation results for Kazakhstan are presented in Table 7, and based on the estimation results, equation 2 provides the effects of the independent variables on the national GDP per capita in Kazakhstan.

Table 4. Regression results for Kazakhstan.

<i>Regression Statistics</i>						
Multiple R	0.91					
R Square	0.83					
Adjusted R Square	0.79					
Standard Error	954.99					
Observations	23					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	5	78007167.85	15601433.6	17.1066217	4.18248E-06	
Residual	17	15504193.33	912011.372			
Total	22	93511361.18				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	19166.80	2173.24	8.82	0.00	14581.66	23751.94
Unemployment, %	-746.29	217.20	-3.44	0.00	-1204.55	-288.03
Gini Index	-168.60	103.95	-1.62	0.12	-387.90	50.71
2008-2009 Crisis	-95.22	933.65	0.10	0.72	-1874.60	2065.04
2015-2016 Crisis	-447.56	746.43	-0.60	0.56	-2022.38	1127.26
2020 crisis	-1207.47	1234.62	2.60	0.02	602.65	5812.28

Source: own analysis of The World Bank, 2024

$$GDP_t = 19,166.80 - 746.29U_t - 168.60GINI_t - 95.22CR1_t - 447.56CR2_t - 1,207.47CR3_t + \varepsilon_t \quad (2)$$

The quality of the model is satisfying (R square is equal to 83%), and three elements are significant – the intercept, the unemployment rate, and the crisis of 2020. According to the estimation results:

- If the unemployment rate increases by 1 percentage point, the GDP per capita falls by 756.29 in 2015\$ (if other variables are held constant).
- If the Gini index increases by 1 point, the GDP per capita falls by 168.60 in 2015\$ (if other variables are held constant).
- The average effect of The Great Recession was a decrease in the real GDP per capita of 95.22 2015\$.
- The average effect of the shock of the 2015-2016 crisis was a decrease in the real GDP per capita of 447.56 2015\$.
- The average effect of the COVID-19 pandemic was a decrease in the real GDP per capita of 1,207.47 2015\$.

4.2.2 Almaty

The estimation results for the Almaty region are presented in Table 8, and based on the estimation results, equation 3 provides the effects of the independent variables on the national GDP per capita in the Almaty region specifically.

Table 5. Regression results for Almaty.

<i>Regression Statistics</i>	
Multiple R	0.91
R Square	0.81
Adjusted R Square	0.79

Standard Error 1098.08

Observations 23

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	5	103083779.1	20616755.8	17.098257	4.19656E-06	
Residual	17	20498279.37	1205781.14			
Total	22	123582058.5				

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	22024.30	2500.74	8.81	0.00	16748.21	27300.39
Unemployment, %	-1075.02	313.04	-3.43	0.00	-1735.48	-414.55
Gini Index	-175.42	108.81	-1.61	0.13	-404.99	54.15
2008-2009 Crisis	-112.99	1073.92	0.11	0.82	-2152.78	2378.77
2015-2016 Crisis	-512.67	858.26	-0.60	0.56	-2323.43	1298.10
2020 crisis	-3696.03	1421.54	2.60	0.02	696.85	6695.21

Source: own analysis of Kazstat, 2024

$$GDP_t = 22,024.30 - 1,075.02U_t - 175.42GINI_t - 112.99CR1_t - 512.67CR2_t - 3,696.03CR3_t + \varepsilon_t \quad (3)$$

The quality of the model is satisfying (R square is equal to 81%), and three elements are significant – the intercept, the unemployment rate, and the crisis of 2020. According to the estimation results:

- If the unemployment rate increases by 1 percentage point, the GDP per capita falls by 1,075.02 in 2015\$ (if other variables are held constant).
- If the Gini index increases by 1 point, the GDP per capita falls by 175.42\$ (if other variables are held constant).

- The average effect of The Great Recession was a decrease in the real GDP per capita of 112.99 2015\$.
- The average effect of the shock of the 2015-2016 crisis was a decrease in the real GDP per capita of 512.67 2015\$.
- The average effect of the COVID-19 pandemic was a decrease in the real GDP per capita of 3,696.03 2015\$.

4.2.3 Jambyl

The estimation results for the Jambyl region are presented in Table 9, and based on the estimation results, equation 4 provides the effects of the independent variables on the national GDP per capita in the Jambyl region specifically.

Table 6. Regression results for Jambyl.

<i>Regression Statistics</i>						
Multiple R	0.91					
R Square	0.86					
Adjusted R Square	0.79					
Standard Error	764.01					
Observations	23					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	5	49902890.89	9980578.18	17.0983134	4.19646E-06	
Residual	17	9923190.949	583717.115			
Total	22	59826081.84				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	15354.47	1744.97	8.80	0.00	11672.90	19036.03
Unemployment, %	-517.27	150.66	-3.43	0.00	-835.14	-199.41
Gini Index	-151.20	92.51	-1.63	0.12	-346.39	43.99
2008-2009 Crisis	-274.58	744.67	0.10	0.62	-1496.53	1645.69
2015-2016 Crisis	-359.92	597.43	-0.60	0.55	-1620.39	900.54
2020 crisis	-2557.86	987.05	2.59	0.02	475.36	4640.36

Source: own analysis of Kazstat, 2024

$$GDP_t = 15,354.47 - 517.27U_t - 151.20GINI_t - 274.58CR1_t - 359.92CR2_t - 2,557.86CR3_t + \varepsilon_t \quad (4)$$

The quality of the model is satisfying (R square is equal to 86%), and three elements are significant – the intercept, the unemployment rate, and the crisis of 2020. According to the estimation results:

- If the unemployment rate increases by 1 percentage point, the GDP per capita falls by 517.27 in 2015\$ (if other variables are held constant).
- If the Gini index increases by 1 point, the GDP per capita falls by 151.20\$ (if other variables are held constant).
- The average effect of The Great Recession was a decrease in the real GDP per capita of 274.58 2015\$.
- The average effect of the shock of the 2015-2016 crisis was a decrease in the real GDP per capita of 359.92 in 2015\$.
- The average effect of the COVID-19 pandemic was a decrease in the real GDP per capita of 2,557.86 2015\$.

Discussion continues in the next chapter of the bachelor thesis, where the most important findings are summarized.

5 Results and Discussion

This thesis focused on the impact of the 2008 global financial crisis (The Great Recession) on socio-economic development in Kazakhstan, focusing on Almaty and Jambyl regions. The time series and regression analysis together provided a good insight into how the consequences of the crisis varied both at the national and regional levels. The next section summarizes all the findings, draws important links, and goes back to the initial objectives.

Yet, in the entire economy, Kazakhstan remained more or less resistant to the 2008 crisis. In fact, its GDP per capita once fell but regained stability through government intervention such as fiscal stimulus and bank recapitalization. Actually, that resilience is reflected in the quick recovery after a brief fall in GDP per capita during the crisis period, which proves the efficiency of Kazakhstan's crisis management. The results from the time series analysis show that though the crisis of 2008 caused economic growth to slump, the recovery was swift as GDP per capita returned to growth by 2010. However, the long-term effects of the Gini index, which describes income inequality, suggest an incomplete trickle-down of the benefits of such recovery among all strata of Kazakhstani society.

This regional analysis of Almaty and Jambyl really brought out sharp contrasts in how the crisis affected different parts of this country. Almaty, being one of the most economically developed regions in Kazakhstan, is experiencing a faster recovery. Its diversified economy, strong both in services and manufacturing, has thus better withstood the storm than regions such as Jambyl, which are dependent on agriculture and are not so well diversified. Thus, GDP per capita reached the pre-crisis level rather quickly, while unemployment was constantly lower than the national average. This reflects the fact that economically more advanced regions with better infrastructure and resource endowment are more resilient to external shocks.

On the contrary, Jambyl showed a slower recovery. Being more rural and economically underdeveloped, reliance upon sectors that were hardest hit by the crisis made the effects in this region more pronounced and longer-lasting. GDP per capita for the region was falling behind both Almaty and the national average, while unemployment remained persistently

high. Despite such a number of challenges, Jambyl showed lower levels of income inequality compared to Almaty. This might be interpreted as a consequence of its lower general economic development, where general income levels are low and more equally distributed within the population.

Beyond the financial crisis of 2008, the thesis also made a comparison of its impact with the local economic crisis of 2015-2016 and the COVID-19 pandemic of 2020. The immediate and most profound effect on the country's economic indicators was brought about by the crisis in 2008, whereas for the economy of Kazakhstan, the COVID-19 pandemic of 2020 caused a more dramatic short-term impact that was felt in regions like Almaty. From the regression, one could gather that the 2020 crisis has had much more of a strong blow to GDP per capita compared with the crisis in 2008, not least because of the very nature of the pandemic that has seriously restricted economic activity across various sectors. The pandemic also hit hard on the rate of unemployment, especially within urban areas like Almaty, due to the various cases of lockdown and restrictions which led to some businesses closing down, thereby causing people to lose their jobs.

The 2008 crisis had wide-reaching implications for Kazakhstan's socio-economic development in addressing the thesis objectives. The effects were not uniform across the country. Almaty, therefore, had a stronger economic base and soon recovered, while Jambyl had a weak economic infrastructure and fell behind. Government intervention was essential in many ways to dispel the disastrous effects of the crisis, but long-term issues like income disparities and regional inequalities continued unabated. The analysis therefore indicates that the policy direction for the future should continue to deepen the diversification process of the national economy and strengthen the economic foundation of the backward regions like Jambyl, to be more robust in case there is an after-shock.

6 Conclusion

This thesis has sought to investigate the socio-economic consequence of the global 2008 financial crisis on Kazakhstan, focusing on the regions of Almaty and Jambyl. It intends to analyze the impact on GDP per capita, the rate of unemployment, and the level of income inequality at the national level due to this crisis and to compare those effects in two contrasting regions. To catch the various economic outcomes and regional disparities of the crisis, time series analysis and linear regression models were applied, along with other important economic shocks: a local crisis in 2015-2016 and the COVID-19 pandemic.

The findings of the analysis indicated that on a national scale, Kazakhstan recovered well from the 2008 crisis but that the effects were distributed very unequally across the country. While Almaty, with its more diversified and developed economy, regained its pace sooner, Jambyl is a rural region and its economic base is not that developed, thus it recovered much more slowly. The 2008 crisis therefore significantly negatively affected both GDP per capita and unemployment for the two regions, but the underlying economic infrastructure in Almaty allowed it to return more quickly to pre-crisis levels. In turn, Jambyl showed longer-lasting unemployment and a slower pace of economic recovery, reflecting the gap between the more and less-developed regions.

In general, the paper underlines the importance of diversification in the economic structure and selective policy measures in lessening the negative impacts of world financial crises. The research clearly showed that the fiscal stimulus and support to the financial sector from the government prevented Kazakhstan from falling into this crisis. These findings also underpin the long-term strategy of strengthening underdeveloped regions, like Jambyl, in relevance to making socio-economic development more balanced and resilient against any future crises. Such a comparative regional approach will enable the thesis to develop an in-depth understanding of how global financial shocks have affected various parts of the developing economy in Kazakhstan.

7 References

- Abdel-Khalik, A. R. (2016). *Transforming Big Banks into Bucket Shops: The Impact of Gramm-Leach-Bliley Act & The Commodity Futures Modernization Act* (SSRN Scholarly Paper 2814100). Social Science Research Network. <https://doi.org/10.2139/ssrn.2814100>
- Afxentiou, D., Harris, P., & Kutasovic, P. (2022). The COVID-19 Housing Boom: Is a 2007–2009-Type Crisis on the Horizon? *Journal of Risk and Financial Management*, *15*(8), Article 8. <https://doi.org/10.3390/jrfm15080371>
- Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2014). Predatory lending and the subprime crisis. *Journal of Financial Economics*, *113*(1), 29–52. <https://doi.org/10.1016/j.jfineco.2014.02.008>
- Azhiguzhayeva, A., Basshieva, Z., & Malgarayeva, Z. (2021). Economic Efficiency of Housing Construction. Environmental Impact. *Journal of Environmental Management and Tourism*, *12*(3), Article 3. [https://doi.org/10.14505//jemt.v12.3\(51\).10](https://doi.org/10.14505//jemt.v12.3(51).10)
- Baikulakov, S. (2019). *An equilibrium level of credits in the economy of Kazakhstan*.
- Bernanke, B. S. (2022). *21st Century Monetary Policy: The Federal Reserve from the Great Inflation to COVID-19*. W. W. Norton & Company.
- Betts, A. (2013). *Survival Migration: Failed Governance and the Crisis of Displacement*. Cornell University Press. <https://doi.org/10.7591/cornell/9780801451065.001.0001>
- Boin, A., Lodge, M., & Luesink, M. (2020). Learning from the COVID-19 crisis: An initial analysis of national responses. *Policy Design and Practice*, *3*(3), 189–204. <https://doi.org/10.1080/25741292.2020.1823670>

- Bouchaud, J.-P. (2013). Crises and Collective Socio-Economic Phenomena: Simple Models and Challenges. *Journal of Statistical Physics*, 151(3), 567–606.
<https://doi.org/10.1007/s10955-012-0687-3>
- Brooks, R., Cline, B. N., & Enders, W. (2012). *Information in the U.S. Treasury Term Structure of Interest Rates*. <https://onlinelibrary.wiley.com/doi/10.1111/j.1540-6288.2012.00328.x>
- Calomiris, C. W. (2009). The Subprime Turmoil: *What's Old, What's New, and What's Next*. *The Journal of Structured Finance*, 15(1), 6–52.
<https://doi.org/10.3905/JSF.2009.15.1.006>
- CEIC, D. (2024). *Kazakhstan External Debt, 2000 – 2024 | CEIC Data*.
<https://www.ceicdata.com/en/indicator/kazakhstan/external-debt>
- Chadwick, A. (2017). REGULATING EXCESSIVE SPECULATION: COMMODITY DERIVATIVES AND THE GLOBAL FOOD CRISIS. *International & Comparative Law Quarterly*, 66(3), 625–655.
<https://doi.org/10.1017/S0020589317000136>
- Feld, S. (2021). *International Migration, Remittances and Brain Drain: Impacts on Development* (Vol. 13). Springer International Publishing.
<https://doi.org/10.1007/978-3-030-75513-3>
- Fuster, A., Lucca, D., & Vickery, J. (2023). *Chapter 15: Mortgage-backed securities*.
<https://www.elgaronline.com/edcollchap/book/9781800375321/book-part-9781800375321-24.xml>
- Giacomini, L. <1998>. (2023). *Collateralized Debt Obligation analysis of the behaviour during crises*. <http://dspace.unive.it/handle/10579/23566>

- Gorton, G. (2017). The History and Economics of Safe Assets. *Annual Review of Economics*, 9(Volume 9, 2017), 547–586. <https://doi.org/10.1146/annurev-economics-033017-125810>
- Hausmann, R., Taniparti, N., Brenot, C., Barrios, D., Soylu, C., El Houda, R., Vashkinskaya, E., Belostecinic, F., & Henn, S. (2023). A Growth Diagnostic of Kazakhstan. *CID Faculty Working Paper Series*. <https://dash.harvard.edu/handle/1/37374857>
- Imtiaz Mazumder, M., & Ahmad, N. (2010). Greed, financial innovation or laxity of regulation? *Studies in Economics and Finance*, 27(2), 110–134. <https://doi.org/10.1108/10867371011048616>
- Jessen, S., Drejer, I., & Rub, J. (2021). *THE EVOLUTION OF REGIONAL INDUSTRIES IN TIMES OF CRISIS*.
- Kalyuzhnova, Y., & Patterson, K. (2016). Kazakhstan: Long-Term Economic Growth and the Role of the Oil Sector. *Comparative Economic Studies*, 58(1), 93–118. <https://doi.org/10.1057/ces.2015.31>
- Kapucu, N., & Ozerdem, A. (2013). *Managing Emergencies and Crises*.
- Karimova, D. (2009). *Working age population of Kazakhstan in 1999–2007*. <https://dspace.cuni.cz/handle/20.500.11956/26967>
- Kazstat. (2024). Statistics. <https://stat.gov.kz/en/>
- Martin, R. (2021). Rebuilding the economy from the Covid crisis: Time to rethink regional studies? *Regional Studies, Regional Science*, 8(1), 143–161. <https://doi.org/10.1080/21681376.2021.1919191>
- Martin, R., & Sunley, P. (2020). *Chapter 2: Regional economic resilience: evolution and evaluation*. <https://www.elgaronline.com/edcollchap/edcoll/9781785360855/9781785360855.00007.xml>

- McLennan, M., & Group, S. (2022). *The Global Risks Report 2022 17th Edition*.
- Mengle, D. (2007). *Credit Derivatives: An Overview*.
- Parker, C. F., Nohrstedt, D., Baird, J., Hermansson, H., Rubin, O., & Baekkeskov, E. (2020). Collaborative crisis management: A plausibility probe of core assumptions. *Policy and Society*, 39(4), 510–529. <https://doi.org/10.1080/14494035.2020.1767337>
- Robinson, N. (2013). Russian Patrimonial Capitalism and the International Financial Crisis. In *The International Economic Crisis and the Post-Soviet States*. Routledge.
- Ruziev, K., & Majidov, T. (2013). Differing Effects of the Global Financial Crisis on the Central Asian Countries: Kazakhstan, the Kyrgyz Republic and Uzbekistan. *Europe-Asia Studies*, 65(4), 682–716. <https://doi.org/10.1080/09668136.2013.766044>
- Saha, S., & Sen, K. (2023). Do economic and political crises lead to corruption? The role of institutions. *Economic Modelling*, 124, 106307. <https://doi.org/10.1016/j.econmod.2023.106307>
- Schwarcz, D., & Schwarcz, S. L. (2014). Regulating Systemic Risk in Insurance. *The University of Chicago Law Review*, 81(4), 1569–1640. <https://www.jstor.org/stable/43151586>
- Seiler, M., Seiler, V., Traub, S., & Harrison, D. (2008). Regret Aversion and False Reference Points in Residential Real Estate. *Journal of Real Estate Research*, 30(4), 461–474. <https://doi.org/10.1080/10835547.2008.12091229>
- Sergey, R. (2009). The world economic crisis and its impact on the socioeconomic situation in Kazakhstan. *Central Asia and the Caucasus*, 6 (60), Article 6 (60). <https://cyberleninka.ru/article/n/the-world-economic-crisis-and-its-impact-on-the-socioeconomic-situation-in-kazakhstan>
- Sherimova, N. M., Bayandina, G. D., Beisembayeva, G. C., Tleubergenova, M. A., Demeuova, G. K., & Isabekov, B. N. (2022). MECHANISM FOR MANAGING

INNOVATIVE ACTIVITY OF BUSINESS STRUCTURES IN THE INDUSTRIAL SECTOR OF THE REPUBLIC OF KAZAKHSTAN. *Научный Журнал «Вестник НАН РК»*, 2, Article 2. <https://doi.org/10.32014/2022.2518-1467.296>

Spash, C. L. (2021). ‘The economy’ as if people mattered: Revisiting critiques of economic growth in a time of crisis. *Globalizations*, 18(7), 1087–1104. <https://doi.org/10.1080/14747731.2020.1761612>

Theodore, N. (2020). Governing through austerity: (Il)logics of neoliberal urbanism after the global financial crisis. *Journal of Urban Affairs*, 42(1), 1–17. <https://doi.org/10.1080/07352166.2019.1623683>

The World Bank. (2024). Data. <https://www.worldbank.org/ext/en/home>

Thompson, H. (2012). The Limits of Blaming Neo-Liberalism: Fannie Mae and Freddie Mac, the American State and the Financial Crisis. *New Political Economy*, 17(4), 399–419. <https://doi.org/10.1080/13563467.2011.595481>

Turner, A. (2010). *Copyright © by the Authors. All Rights Reserved. 2010.*

Verick, S., & Islam, I. (2010). *The Great Recession of 2008-2009: Causes, Consequences and Policy Responses* (SSRN Scholarly Paper 1631069). Social Science Research Network. <https://doi.org/10.2139/ssrn.1631069>

Worldometer, O. S. (2024). *Kazakhstan Map (Political)—Worldometer*. <https://www.worldometers.info/maps/kazakhstan-political-map/>

Zywicki, T. J., & Adamson, J. D. (2009). The Law and Economics of Subprime Lending. *University of Colorado Law Review*, 80, 1. <https://heinonline.org/HOL/Page?handle=hein.journals/ucollr80&id=3&div=&collection=>

8 Appendices

8.1 List of Tables

Table 1. Socio-economic data for Kazakhstan in 2001-2023.....	28
Table 2. Socio-economic data for Almaty region in 2001-2023.....	31
Table 3. Socio-economic data for Jambyl region in 2001-2023.	35
Table 4. Regression results for Kazakhstan.	39
Table 5. Regression results for Almaty.	40
Table 6. Regression results for Jambyl.....	42
Table 7. Linear Regression in Kazakhstan.	53
Table 8. Linear Regression in Almaty.....	54
Table 9. Linear Regression in Jambyl.	55

8.2 List of Figures

Figure 1. Map of the Kazakhstan.	21
Figure 2. External Debt of the Kazakhstan (2000 - 2024)	26

8.3 List of Graphs

Graph 1. GDP per capita in 2001-2023 in Kazakhstan.	29
Graph 2. Unemployment in Kazakhstan in 2001-2023.....	30
Graph 3. Gini index in Kazakhstan in 2001-2023.....	30
Graph 4. GDP per capita in Almaty region in 2001-2023.....	32
Graph 5. Unemployment in Almaty region in 2001-2023.	33
Graph 6. Gini index in Almaty region in 2001-2023.	34
Graph 7. GDP per capita in Jambyl region in 2001-2023.....	36
Graph 8. Unemployment in Jambyl region in 2001-2023.....	37
Graph 9. Gini index in Jambyl region in 2001-2023.....	38

8.4 List of Abbreviations

MBS	Mortgage-Backed Securities
GDP	Gross Domestic Product
COVID-19	Covid-19 Pandemic
PCB	First Credit Bureau
LSAP	Large-Scale Asset Purchase
CDO	Collateralized Debt Obligations
CIS	Commonwealth of Independent States
FOMC	Federal Open Market Committee
USD	United States Dollar
US	United States of America

8.5 Tables

Table 7. Linear Regression in Kazakhstan.

Year	GDP per capita, 2015\$	Unemployment, %	Gini Index	2008-2009 Crisis	2015-2016 Crisis	2020 crisis
2001	5055.31	10.43	37	0	0	0
2002	5550.50	9.33	36	0	0	0
2003	6046.33	8.78	34.8	0	0	0
2004	6580.88	8.4	33.7	0	0	0
2005	7155.34	8.13	31.8	0	0	0
2006	7837.63	7.79	39.8	0	0	0
2007	8438.10	7.26	30.2	0	0	0
2008	7554.82	8.45	30.1	1	0	0
2009	7887.54	9.24	28.5	1	0	0
2010	8979.33	5.77	28.2	0	0	0
2011	9506.73	5.39	28	0	0	0
2012	9823.69	5.29	28	0	0	0

2013	10264.30	5.2	28.2	0	0	0
2014	10539.04	5.06	27.1	0	0	0
2015	10510.77	4.93	27	0	1	0
2016	10476.35	4.96	26.8	0	1	0
2017	10758.52	4.9	27.2	0	0	0
2018	11053.36	4.85	27.5	0	0	0
2019	11402.76	4.8	27.8	0	0	0
2020	10974.24	8.95	28	0	0	1
2021	11186.28	7.98	28.7	0	0	0
2022	11283.42	4.86	29.2	0	0	0
2023	11700.84	4.847	28.3	0	0	0

Source: The World Bank, 2024

Table 8. Linear Regression in Almaty.

Year	GDP per capita, 2015\$	Unemployment, %	Gini Index	2008-2009 Crisis	2015-2016 Crisis	2020 crisis
2001	5813.61	8.34	40.7	0	0	0
2002	6383.08	7.46	39.6	0	0	0
2003	6953.28	7.02	38.3	0	0	0
2004	7567.01	6.72	37.1	0	0	0
2005	8228.64	6.5	35	0	0	0
2006	9013.27	6.23	43.8	0	0	0
2007	9703.82	5.81	33.2	0	0	0
2008	8688.04	6.76	33.1	1	0	0
2009	9060.67	7.39	31.4	1	0	0
2010	10346.23	4.62	31	0	0	0
2011	10932.74	4.31	30.8	0	0	0
2012	11296.24	4.23	30.8	0	0	0
2013	11758.95	4.16	31	0	0	0
2014	12119.90	4.05	29.8	0	0	0
2015	12087.39	3.94	29.7	0	1	0
2016	12047.80	3.97	29.5	0	1	0
2017	12372.30	3.92	30	0	0	0

2018	12711.36	3.88	30.3	0	0	0
2019	13113.18	3.84	30.6	0	0	0
2020	12620.37	7.16	30.8	0	0	1
2021	12864.23	6.38	31.6	0	0	0
2022	12975.93	3.89	32.1	0	0	0
2023	13455.97	3.88	31.1	0	0	0

Source: Kazstat, 2024

Table 9. Linear Regression in Jambyl.

Year	GDP per capita, 2015\$	Unemployment, %	Gini Index	2008-2009 Crisis	2015-2016 Crisis	2020 crisis
2001	4044.25	12	33.3	0	0	0
2002	4440.40	10.73	32.4	0	0	0
2003	4837.06	10.1	31.3	0	0	0
2004	5264.70	9.66	30.3	0	0	0
2005	5724.27	9.35	28.6	0	0	0
2006	6264.27	8.96	35.8	0	0	0
2007	6750.48	8.35	27.2	0	0	0
2008	6043.86	9.72	27.1	1	0	0
2009	6309.63	10.62	25.7	1	0	0
2010	7183.46	6.63	25.4	0	0	0
2011	7605.38	6.2	25.2	0	0	0
2012	7858.95	6.08	25.2	0	0	0
2013	8182.96	5.98	25.4	0	0	0
2014	8431.23	5.82	24.4	0	0	0
2015	8408.62	5.67	24.3	0	1	0
2016	8381.08	5.7	24.1	0	1	0
2017	8606.84	5.63	24.5	0	0	0

2018	8846.85	5.57	24.8	0	0	0
2019	9122.21	5.52	25	0	0	0
2020	8779.39	10.29	25.2	0	0	1
2021	8949.83	9.18	25.8	0	0	0
2022	9026.74	5.59	26.3	0	0	0
2023	9360.67	5.57	25.5	0	0	0

Source: Kazstat, 2024