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Integrated Economic Dynamics, Business Activity and Income Stability in Urban Kazakhstan

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Abstract
The discrepancy between economic growth and the population's income level is becoming one of the key problems in the development of urban economies, as the expansion of production and business does not lead to an improvement in living standards. The purpose of the study is to identify the causes of uneven income growth across Kazakhstan's cities and to determine the economic conditions that ensure their sustainable dynamics. The research methodology is based on a comprehensive analysis of indicator dynamics using an indicator system, calculation of relative changes, inter-city comparative analysis, and typologization based on thresholds. The empirical basis of the study was official statistical data for 17 cities of Kazakhstan for the period 2016–2024, including indicators of wages, employment, gross regional product, retail turnover, and population. The results showed significant differences in economic dynamics between cities. The highest values of the integral IED index were recorded in Astana (TotalMean = 44.98), Uralsk (23.67) and Shymkent (22.98), while negative values prevail in Karaganda (−11.71), Taraz (−9.77) and Kokshetau (−6.59). It has been established that steady income growth is driven mainly by cities with a developed labor market and an active consumer market, whereas output growth alone does not guarantee an increase in population well-being. The results confirm that the key factor in sustainable income growth is not the scale of economic activity, but the degree of its integration with employment and domestic demand.

KEYWORDS
Economy, Economic Growth, Urban Economy, Business, Business Activity, Employment, Labour Market, Income Stability

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1 | INTRODUCTION

Economic growth does not always lead to higher income for the population. Globally, countries have been facing the discrepancy between economic development and improvement in living standards. The economic value created does not always translate into sustainable wages, employment, or consumption growth. The International Labor Organization, the World Bank, and the OECD have repeatedly raised this issue in analytical reports and policy documents (World Bank, 2019; ILO, 2023; OECD, 2025). Economic growth can be accompanied by wage stagnation, increased precarious employment, and greater inequality due to the poor distribution of development benefits within the labor market and the income system. In particular, ILO reports emphasize the weakening link between labour productivity and wages, while World Bank and OECD reports highlight the growing number of "working poor" and precarious employment patterns, even amid economic recovery.

International experience shows that high rates of economic growth do not guarantee a high standard of living. Urban development is expected to increase incomes, expand employment, and improve living standards. In many cities, economic development is short-lived and is not accompanied by sustainable growth in household incomes. From the 1990s to the 2010s, Chinese cities such as Shanghai, Beijing, Shenzhen, and Guangzhou experienced rapid GDP growth, but income growth for most of the population was weak. This was particularly true for workers and migrants in the service sector and in low-level positions in the private sector, as well as in regions with export-oriented manufacturing (Li, 2016). In the US, industrial agglomerations such as Detroit, Chicago, Los Angeles, and New York experienced growth in productivity and economic activity between 1978 and 2014. However, wages did not grow, particularly in cities with a high concentration of large companies (Wilmers, 2018). In Italy, from 1951 to 2011, accelerated urbanization was observed in Milan, Turin, Bologna, and Naples, driven by certain industries and large companies, while the labor market did not provide sustainable wage growth for many employees (Accetturo et al., 2019). In particular, in cities and regions where the economy was based on agriculture and traditional production, the population's income did not grow, and the economy declined.

Amid accelerated urbanization, the gap between the scale of urban economic activity and the population's actual socioeconomic outcomes is widening. Growth in production, services, and business activity does not always lead to the creation of stable jobs, rising wages, and the development of the consumer market. As a result, the urban economy can exhibit positive dynamics without fulfilling its key function of ensuring a sustainable standard of living and income for the population.

Despite a significant number of studies on the relationship among economic growth, employment, and income, there is no unified approach in modern scientific literature for assessing their consistency at the level of urban economies. Most existing studies either analyze these indicators in isolation or combine them into aggregated indexes without identifying thresholds at which their interaction ensures a steady increase in household incomes. As a result, the question of under what conditions economic growth actually improves the well-being of the population, as well as which structural characteristics of the urban economy ensure this transformation, remains insufficiently studied. The purpose of the study is to identify the causes of uneven income growth across Kazakhstan's cities and to determine the economic conditions that ensure their sustainable dynamics.

2 | LITERATURE REVIEW

Research on urban economic development and sustainability focuses on indicators such as population, labour market conditions, income, and economic output. Some studies note the role of demographic growth, employment, and poverty in the sustainable development of cities. Thus, Drakakis-Smith (1996) used indicators of population growth, employment, and job creation, and the poverty rate to demonstrate that accelerated urbanisation is unable to support the population and leads to chronic imbalances. In particular, the rapid growth of urban populations is not matched by the urban economy, leading to high unemployment or hidden employment, the expansion of the informal sector, concentrated poverty, and a decline in the quality of employment. The sustainability of urban development is undermined, and socioeconomic instability increases. Cities with high rates of economic growth can simultaneously be characterised by low social resilience, such as overburdened infrastructure, uneven access to jobs, and deteriorating living conditions. Liu et al. (2014) concluded that rapid economic growth does not guarantee sustainability unless there are improvements in the employment rate, the city's social capacity, and resource efficiency, which effectively signal the presence of hidden internal imbalances in the urban economy (Kajiita & Kang'ethe, 2024).

Some studies prioritize accelerated growth as a solution to urban growth dilemmas. Increasing output, particularly through accelerated construction or investment expansion, does not generate high-quality employment. While output (e.g., the city's GRP) grows, new jobs are either not created in sufficient numbers or are created in low-productivity sectors with unstable, short-term contracts and low incomes (Wu et al., 2016; Accetturo et al., 2019). Liu et al. (2020) analyzed economic output, employment, and wages simultaneously and found that output growth does not generate income for everyone. That new jobs are concentrated in certain sectors; that wage increases accrue to a narrow group of workers, and that inequality between groups increases. At the macro- and meso-levels, the impact of economic growth on sustainability is conditional. Growth alone does not ensure sustainability if income and production processes are incoherent, deepening inequality and reducing long-term development potential (Cheng & Lin, 2022). Consequently, assessing single indicators does not provide an assessment of the sustainability of urban development, as differences between cities can be determined by the degree of coordination among key components.

The importance of purchasing power reflects the final socioeconomic outcome and the combined significance of income, employment, and economic output, that is, the actual standard of living of the population. Consumer activity is considered a tool for assessing the extent to which income and economic output growth are translated into actual consumption. Thus, strong local consumption supports employment and incomes (Markusen & Schrock, 2009). Khan et al. (2019) considered retail turnover as an indicator of the population's purchasing power, finding that growth in industrial output and population does not guarantee expanded consumption. Thus, with weak purchasing power, economic development is accompanied by rising environmental burdens and the deterioration of the urban environment, without a corresponding improvement in living standards. Growth in per capita output can outpace growth in income and consumption, creating a gap between economic potential and the population's actual wealth (Li, 2016; Zhang & Xie, 2019). Even with increased overall economic output, the weak consumer base limits the development of service industries and the domestic market (Lei et al., 2021).

Other studies consider income, employment, and economic output as key indicators of the urban economy, reflecting the underlying mechanisms of the formation and distribution

of economic results. In the study by Fagiolo et al. (2004), the joint dynamics of output, employment, and wages are analysed within an evolutionary framework, which allows us to demonstrate their simultaneous formation and interdependence during the functioning of the labour market and the production system. The authors emphasised that treating these indicators separately does not adequately describe real economic processes, as changes in output are directly related to employment conditions and income levels. According to Xu et al. (2018) the analysis of the transformation of the urban labor market in China reveals a change in the structure of income determinants in the context of market reforms, indicating the need to simultaneously consider employment, earnings, and economic activity when assessing urban development. In this context, the study by Zhang et al. (2017) demonstrates that economic output and employment, as reflected in productivity indicators, are influenced by the spatial and structural organisation of a city, confirming that these categories constitute basic characteristics of the efficiency of the urban economy. To sum up, income, employment, and economic output are fundamental indicators for urban development analysis, as they capture key structural differences between cities.

In labor market research, one of the key objectives has been to identify the point at which economic changes begin and to determine how the labor market responds to them. To address this, analysis is based not only on the absolute values of employment or wage indicators, but primarily on their changes over time. Therefore, empirical studies often use a change indicator called delta (Δ), which reflects the difference between indicator values across periods and allows the direction of ongoing processes to be identified. Autor et al. (2013) examined the response of local labour markets to external economic shocks. Structural economic factors, including external competition and changes in regional industrial specialisation, were revealed to affect employment, wages, and labour force participation. A similar approach was applied by Blanchard and Katz (1999), who highlighted the adaptation of regional economies to economic shocks through successive changes in employment, wages, and labour migration. The delta (Δ) values captured changes in economic variables and indicated when employment and wages began moving in the same direction. In particular, Faggio and Overman (2014) examined employment dynamics at the local economy level by analyzing changes in indicators over time. In their model, changes in overall employment are expressed as proportional changes between two points and then decomposed into contributions from individual labour market components. The results showed that increases in public sector employment influence the structure of the local labour market and can be accompanied by changes in private sector employment, reflecting the interconnectedness of the regional economy's various segments.

Several studies use aggregate indicators to comprehensively assess urban economic development, combining measures of economic activity, employment, and income (Zhang et al., 2017; Rodrigues & Franco, 2019). Yang et al. (2017) proposed an aggregate index of sustainable urban development for Chinese cities based on economic and social indicators. The authors showed that rapid output growth is often accompanied by imbalances in the employment structure, an uneven income distribution, and an increasing resource burden, despite favourable macroeconomic indicators. Thus, when analysing the indicators separately, the overall result may show growth or moderate dynamics: economic output may grow, employment may formally expand, but income distribution becomes increasingly less consistent with overall economic dynamics. Furthermore, Rodrigues and Franco (2020) noted that income, employment, and economic output are key factors for identifying differences between cities. The authors do not use expert weighting or assign subjective weights to individual indicators. Aggregation is achieved by normalising the original variables and

combining them into a composite index, assuming equal contributions from each indicator. Shutters et al. (2021) emphasised that it is the overall structure of the economy, rather than the dynamics of individual indicators, that determines a city's ability to adapt to external shocks.

A literature review demonstrates that the use of aggregate indices and integrated analytical approaches provides a comprehensive analysis of urban development and its impact on living standards. The studies reviewed consistently identify key categories of socioeconomic indicators reflecting the fundamental mechanisms of the urban economy, including average nominal wages, employment, gross regional product, retail turnover, and population. These indicators are interpreted as interrelated elements of the urban economic system. However, most existing studies either analyse these indicators separately or combine them into composite indices without identifying the point at which the interaction between income, employment, and economic output becomes balanced and contributes to sustainable urban development. Thus, the literature does not provide a clear analytical benchmark that reflects the equilibrium relationship between these indicators.

Existing studies analyse income, employment and economic output either separately or through composite indices, but do not identify the equilibrium range at which their interaction reflects stable urban economic development. This study addresses this gap by introducing the Integrated Economic Dynamics (hereinafter – IED) indicator and identifying the range in which the interaction between income and employment reflects stable economic development and supports improvements in living standards.

3 | METHODOLOGY

The calculations were based on the initial absolute values of the indicators for the period from 2015 to 2024. To conduct the analysis, the annual change in each indicator for each city was calculated. The delta calculation has enabled visual comparison of cities since 2016, as it is the difference between two adjacent years. Therefore, the first year for which a change value could be obtained was 2016. Hence, all calculations were conducted using data from 2016 to 2024.

The indicators used in the analysis are presented in Table 1.

Table 1 Indicators and units of measurement

Indicator	Symbol	Unit of Measurement
Average nominal monthly wage	W	tenge
Employed population	E	persons
Gross Regional Product	GRP	tenge
Retail trade turnover	RT	tenge
Population size	N	persons

Note: compiled by the authors

The analysis comprised five stages to identify overall economic potential, development pressure zones, the relationship between resource growth and activity, and the ability of single-industry towns to maintain an economic base (Table 2).

Table 2 Research stages

Stage	Description	Focus of analysis	Key related indicators
Stage 1	Income and Employment Dynamics	Changes in income levels and employment	Income changes relative to employment changes
Stage 2	Wage and Economic Output Gap	Wage dynamics and economic output dynamics	Wage changes relative to Gross Regional Product
Stage 3	Population Coverage by Economic Output	Economic output per capita	Gross Regional Product relative to population size
Stage 4	Consumer Market Density (CMD)	Retail market activity and population change	Retail trade turnover relative to population change
Stage 5	Threshold-based typology	IED relative to WPG, EPC, and CMD	Identification of income-supporting economic conditions

Note: compiled by the authors

The change in each economic indicator is calculated as the relative growth rate using the following formula (1):

$$\Delta X = \frac{X_t - X_{t-1}}{X_{t-1}} \tag{1}$$

where:

X_t – the value of the indicator in the current period;

X_{t-1} – the value of the indicator in the previous period.

The calculation of delta (Δ) was applied to analyse indicators with different measurement units in comparable dynamic terms. The calculation of Δ was applied to the main variables used in the analysis, including average nominal monthly wage (W), employment (E), gross regional product (GRP), retail trade turnover (RT), and population size (N).

First stage. Analysis of the income–employment dynamics is calculated by the formula (2):

$$IED = \frac{\Delta W}{\Delta E} \tag{2}$$

where:

ΔW – average nominal monthly wage;

ΔE – number of employed persons.

The analysis of income and employment dynamics will allow assessment of the urban economic situation based on changes in income and employment, whether the economy is developing sustainably or changing unevenly. The selected data were chosen because income reflects changes in the overall well-being of the population, and employment reflects changes in participation in the economy, whether the economy is strengthening or weakening. Additionally, it will show the extent to which changes in the labor force support economic changes. The main objective of this analysis is to determine whether economic and employment changes are developing simultaneously or if there is a gap between them.

Second stage. Analysis of the wage and productivity gap is calculated by the formula (3):

$$WPG = \frac{\Delta W}{\Delta GRP} \tag{3}$$

where:

ΔW – average nominal monthly wage;

ΔGRP – gross regional product.

A wage-productivity gap analysis will allow assessing the relationship between changes in income and the value created by the economy. Namely, to what extent changes in wages correspond to changes in regional output. The selected indicators show whether the production base is developing and whether changes in income are supported by real economic impact. Therefore, it will be possible to reveal the equilibrium between economic output and the population's income, or the gap between productivity and wages.

Wages are rising, but the regional economy is failing to keep pace with the individual income increase. As a result, labor is devalued because wage increases are driven by external factors unrelated to local economic development. Consequently, the analysis will reveal if a region is creating sufficient value to support the observed level of income growth.

Third stage. Analysis of the economic power concentration is calculated by the formula (4):

$$EPC = \frac{\Delta GRP}{\Delta N} \tag{4}$$

where:

ΔGRP – gross regional product;

ΔN – number of population.

The analysis of regional economic volume allows assessment of the capacity to sustain regional development and meet residents' basic economic needs. The selected indicators explain the relationship between the scale of production activity and the recipients (number of people). The main objective is to assess whether regions have the capacity to ensure population well-being and the territory's overall ability to support sustainable economic development. High values will indicate a stronger economic base and a higher level of well-being. In comparison, low values will indicate a weaker economic base and insufficient economic resources, especially with a significant influx of population.

Fourth stage. Analysis of the CMD is calculated by formula (5):

$$CMD = \frac{\Delta RT}{\Delta N} \tag{5}$$

where:

ΔRT – retail trade;

ΔN – number of population.

The CMD analysis shows how trade activity changes relative to population growth, to analyze the ability to maintain demand and generate retail sales volume as the population grows. If trade turnover grows faster than population, this indicates increased market activity and sufficient purchasing power. If trade turnover growth lags behind population growth, a weakening consumer environment, and insufficient economic activity, it may be a sign that the economy is in trouble. The main objective is to assess the capacity to cope with increasing population needs and to develop a sustainable market base.

Since the study does not construct a composite index, the indicators are analysed separately. Therefore, equal analytical importance is assigned to each indicator, and no weighting coefficients are applied. Each indicator contributes equally to the interpretation of urban economic dynamics.

The fifth stage of the study revealed the conditions under which urban economic development contributes to household income, per capita economic output, and consumer activity. At this stage, the IED indicator serves as a benchmark against which the wage-to-output gap (WPG), per capita economic output (EPC), and CMD are analyzed. A threshold

classification of cities based on average indicator values was used to determine the levels of economic development that create favourable, neutral, or unfavourable conditions for household income, as well as to identify situations in which comparable increases in earnings and consumption do not accompany economic growth. The novelty of this stage lies in the comprehensive comparison of several economic indicators through a single baseline indicator.

4 | RESULTS AND DISCUSSION

The IED results revealed economic changes in cities and enabled the assessment of sustainable economic growth. An analysis of IED distribution for 2016–2024 revealed differences in economic development across city groups. The IED results showed a decline in economic activity in several cities at the beginning of the period. In 2023–2024, IED values stabilised and were predominantly in the moderately positive range. The weakest cities include Karaganda, Pavlodar, Kokshetau, Petropavlovsk, and Taraz, with negative IED values at the beginning and end of the period. Moreover, despite temporary improvements in Pavlodar, Kokshetau, Petropavlovsk, and Taraz, no sustainable economic development was observed.

Table 3 shows which cities are strengthening their economies and which are experiencing short-term fluctuations without sustained effects.

Table 3 General characteristics of economic dynamics according to the IED for 2016–2024

City	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total Mean
Astana	383.37	0.95	3.17	1.12	4.05	3.82	2.92	2.69	2.75	44.98
Kostanay	3.11	−4.74	3.02	10.33	3.19	6.78	7.66	16.08	−18.30	3.01
Karaganda	−2.28	−1.48	−118.07	−1.94	7.41	−7.47	3.99	10.00	4.49	−11.71
Taraz	−4.15	−48.11	−26.53	2.03	−7.22	13.36	1.06	−13.84	−4.51	−9.77
Ust-Kamenogorsk	11.68	−130.81	29.20	10.21	−14.04	133.80	4.68	3.87	62.34	12.33
Uralsk	5.27	2.57	7.25	19.22	138.36	24.16	1.67	8.88	5.67	23.67
Kokshetau	10.46	11.33	−7.18	−39.63	−3.21	−42.51	1.44	−2.54	12.48	−6.59
Atyrau	−13.73	−0.45	3.81	8.33	−0.23	8.46	6.49	2.35	0.22	1.69
Aktobe	−5.68	3.57	4.43	−51.01	18.48	42.16	3.86	7.15	1.96	2.77
Kyzylorda	−5.03	2.77	4.16	4.11	4.19	23.04	2.61	−44.87	3.23	−0.64
Aktau	−1.57	−0.63	1.65	5.13	−1.43	0.54	1.74	14.16	1.90	2.39
Petropavlovsk	−10.02	−5.99	−10.19	7.34	5.64	0.00	−7.19	−2.24	−4.88	−3.06
Pavlodar	−72.82	−19.33	−15.04	−13.22	238.30	−79.34	75.28	43.47	13.62	18.99
Shymkent	8.01	−6.63	14.41	2.93	145.58	20.57	7.44	10.04	4.50	22.98
Turkestan	1.56	−0.07	−0.29	1.66	13.37	4.20	0.77	2.78	3.10	3.01
Almaty	2.97	2.73	2.10	4.29	4.36	7.91	12.86	4.23	4.23	5.07
Konaev	1.67	−3.00	5.33	−6.82	−4.68	−4.34	1.29	−17.26	3.65	−2.68

Note: compiled by the authors

More favourable economic dynamics are observed in the group of cities of Astana, Ust-Kamenogorsk, Uralsk, Atyrau, Aktobe, Kyzylorda, Kostanay, Shymkent, Turkestan, and Almaty, where positive IED values predominate for most of the period. Economic changes in these cities are generally based on regular sources of output and revenue. The most significant decline in 2024 was in Kostanay (−18.30). Thus, the economy is susceptible to external and internal factors typical of cities with relatively narrow specialisations when

one or more key economic sources temporarily decline, and alternative sectors fail to compensate. As a result, such fluctuations lead to a sharp change in the integrated indicator even within a single year. Therefore, Kostanay lacks sufficient diversification to mitigate abrupt external or internal shocks.

The results of the aggregated IED indicator for 2016–2024 are presented in two characteristics: total mean (TotalMean) and negative mean (NegMean). The most favourable situation was observed in Astana, Uralsk, and Almaty cities, with a consistently positive result and the highest TotalMean values. However, Astana's results showed the maximum total effect and the highest average IED value. The group of cities with predominantly positive dynamics but temporary negative values includes Shymkent, Pavlodar, Uralsk, and Ust-Kamenogorsk. Shymkent has positive results, with minimal negative ones. Pavlodar and Ust-Kamenogorsk have significant negative values and very high positive results. Kostanay, Turkestan, Aktobe, Atyrau, and Aktau occupy an intermediate position, with typically moderate negative values and positive or near-zero results. Economic dynamics here generally remain positive but remain sensitive to individual unfavourable periods, which reduces the average IED values. The weakest overall dynamics are observed in Karaganda, Taraz, Kokshetau, Petropavlovsk, Kyzylorda, and Konaev, where the negative IED values are significant, while the resulting TotalMean indicators remain negative. Astana leads in economic stability and impact scale, followed by Uralsk, Shymkent, and Almaty.

Next, Table 4 presents the results for the wage productivity gap.

Table 4 General characteristics of economic dynamics based on the wage productivity gap for 2016–2024

City	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total Mean
Astana	0.92	0.34	0.40	0.60	4.12	0.96	1.16	0.67	0.68	1.10
Kostanay	1.37	0.33	0.69	0.87	0.97	0.68	1.15	3.48	1.35	1.21
Karaganda	0.45	0.41	1.11	0.37	1.31	−34.89	1.02	3.50	0.71	−2.89
Taraz	0.49	0.44	0.64	1.18	1.67	1.18	1.10	1.82	1.95	1.16
Ust-Kamenogorsk	0.74	0.57	0.80	1.15	1.02	−0.53	0.96	1.33	1.04	0.79
Uralsk	0.70	0.43	0.58	3.19	−1.46	0.58	0.77	1.28	−2.19	0.43
Kokshetau	0.58	0.48	0.82	1.26	0.84	1.14	0.70	4.33	0.67	1.20
Atyrau	0.85	−0.15	0.38	1.10	0.05	0.27	1.14	1.51	−1.01	0.46
Aktobe	0.50	0.61	0.63	1.34	−24.30	0.85	1.04	−4.82	0.98	−2.57
Kyzylorda	0.59	0.59	0.49	1.24	−1.28	1.06	0.99	2.96	0.50	0.79
Aktau	0.45	0.13	0.74	0.86	−0.40	0.44	1.64	1.59	0.97	0.71
Petropavlovsk	1.65	0.81	0.66	1.00	1.20	1.27	0.86	1.26	0.58	1.03
Pavlodar	0.85	0.36	0.46	1.25	4.35	0.71	2.32	12.36	0.79	2.61
Shymkent	1.52	0.15	4.44	13.98	1.35	2.80	0.91	0.73	0.83	2.97
Turkestan	1.96	0.61	0.83	1.21	1.63	0.87	0.61	2.18	0.28	1.13
Almaty	0.63	0.56	2.61	0.99	−16.50	1.69	0.72	0.63	0.63	−0.89
Konaev	1.79	0.37	0.79	0.80	1.81	−1.26	1.15	0.60	0.93	0.78

Note: compiled by the authors

The dynamics of the WPG indicator for 2016–2024 revealed the relationship between

wage growth and economic development across cities. The results showed that WPG remains positive and relatively low in most cities. However, sharp negative and positive deviations are observed. Thus, until 2019, most cities experienced volatility (ranging from approximately 0.4 to 1.3). Since 2020, extreme WPG deviations ranging from −34.9 and −24.3 (Karaganda, 2021, and Aktobe, 2020, respectively) to 13.98 and 12.36 (Shymkent, 2019, and Pavlodar, 2023, respectively) have been observed. The most stable dynamics (positive and moderate values) were observed in Astana. In Kostanay, Petropavlovsk, Taraz, and Kokshetau, uneven income growth was observed. Thus, incomes fluctuate with economic conditions.

Based on the results of the WPG analysis, further consideration focuses on the TotalMean and NegMean indicators, which indicate whether income growth is maintained and generally supported by economic activity, and where incomes often decline and remain volatile. Since 2020, the impact of COVID-19 has been evident across many cities, leading to a worsening correlation between household income and economic performance. Negative WPG values in the post-COVID period indicated that household income is sensitive to external factors.

The first group includes cities where sharp declines in WPG have not been observed in the post-COVID period or have been quickly offset: Pavlodar, Shymkent, Astana, Almaty, Kostanay, Taraz, Kokshetau, Petropavlovsk, Turkestan, and Konaev. The service industry, trade, and administrative functions are crucial for income stability and mitigating the severity of declines. Thus, the COVID crisis has revealed structural differences in urban economies: in less diversified, sector-dependent cities, household incomes are declining more rapidly and severely, while cities with a developed service sector demonstrate more stable dynamics.

Pavlodar and Shymkent form a special subgroup in which high positive WPG values have been recorded since 2020. In these cities, income growth in some years significantly outpaces changes in economic output, reflecting sharp redistribution effects. Moreover, the absence of negative values at the end of the period indicates that the favourable ratio remains. Turkestan demonstrated a weakening in household income growth by 2024. Almaty and Konaev experienced short-term income declines, with sharp declines in 2020 and 2021, respectively.

The second group includes cities characterised by high income sensitivity to deteriorating economic conditions, as reflected in significant negative NegMean values and weak TotalMean results. There are cities with high income sensitivity to deteriorating economic conditions, due to the predominance of extractive and industrial sectors, and that have demonstrated significant declines in WPG since 2020: Aktau, Karaganda, Ust-Kamenogorsk, Uralsk, Atyrau, Aktobe, and Kyzylorda. Under these conditions, a reduction in economic activity directly impacts household income. The exceptions are cities with pronounced isolated declines, primarily Karaganda, Aktobe, and Almaty, where the depth of the negative values requires a separate economic explanation.

Next, Table 5 presents results for per capita economic output dynamics.

Overall, the dynamics of economic output per capita for 2016–2024 are characterised by unevenness and the presence of individual extreme values, as well as sharp changes in the volume of economic output per capita. Between 2016 and 2018, the economy expanded overall, supporting growth in per capita production and services. Post-COVID-19 consequences led to a decline in economic activity, and some cities were unable to withstand the external shock. A partial recovery began at the end of the period, in 2022–2024, with some cities returning to their previous levels of per capita production and services.

Table 5 General characteristics of per capita economic output dynamics for 2016–2024

City	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total Mean
Astana	0.10	3.14	3.47	3.14	0.42	1.27	4.31	3.85	2.34	2.45
Kostanay	7.22	11.67	8.38	8.57	12.00	5.96	15.94	4.36	7.03	9.01
Karaganda	37.29	96.48	−15.05	687.64	21.22	−0.23	26.84	6.41	16.25	97.43
Taraz	−52.42	−8.61	23.96	3016.51	7.60	1.16	17.14	10.08	7.06	335.83
Ust-Kamenogorsk	26.77	8.64	16.50	17.40	18.51	−4.81	41.67	25.80	13.83	18.26
Uralsk	7.57	5.35	10.73	3.33	−5.49	2.87	18.32	8.63	−3.01	5.37
Kokshetau	63.51	−247.84	−30.29	19.91	11.18	1.09	23.58	4.22	10.39	−16.03
Atyrau	5.90	3.30	9.39	4.02	−5.78	5.02	11.38	4.17	−0.58	4.09
Aktobe	6.51	3.97	6.79	3.74	−0.24	10.20	3.35	−1.95	6.82	4.36
Kyzylorda	3.72	3.06	2.54	3.49	−3.83	2.47	12.69	3.59	11.74	4.39
Aktau	−297.44	204.04	8.21	1.91	−2.90	0.63	6.05	2.45	1.85	−8.36
Petropavlovsk	61.42	33.37	20.75	112.29	50.79	13.23	−1033.07	38.65	−22.54	−80.57
Pavlodar	44.99	−717.85	573.37	92.74	7.69	20.60	35.41	5.76	32.86	10.62
Shymkent	3.15	9.18	6.18	0.22	4.58	2.04	2.84	9.27	6.45	4.88
Turkestan	63.78	2.42	6.10	4.91	4.07	0.96	7.27	2.49	5.39	10.82
Almaty	5.81	4.22	0.69	3.48	−0.20	1.90	9.64	10.26	8.46	4.92
Konaev	5.93	5.64	6.30	−11.47	−31.42	−9.86	33.31	14.35	10.97	2.64

Note: compiled by the authors

Astana, Kostanay, Shymkent, Turkestan, Almaty, Atyrau, Aktobe, and Kyzylorda cities with consistently positive production per capita characterised by a predominance of positive per capita economic output throughout the entire period. Karaganda, Taraz, Ust-Kamenogorsk, Uralsk, Kokshetau, Aktau, Petropavlovsk, Pavlodar, and Konaev showed sharp fluctuations in per capita output, including critical declines in some years. The economy is vulnerable and depends on production levels from a limited number of industries or on one-time factors.

Based on the aggregated TotalMean and NegMean results, three stable groups of cities can be identified, differing in their economies' ability to generate output per capita. The first group, comprising cities with leading sustainable output per capita, includes Kostanay, Turkestan, Astana, and Shymkent. TotalMean values range from approximately 4.9 to 10.8, with no negative average values. Thus, it could be assumed that the economy is diversified in terms of production and infrastructure. Therefore, these cities are generally capable of regularly generating significant per-capita levels of production and services. The second group, cities with average positions and limited resilience, includes Atyrau, Aktobe, Kyzylorda, Almaty, Uralsk, Ust-Kamenogorsk, as well as Karaganda and Pavlodar. TotalMean values range from approximately 2.5 to 7, but NegMean values are negative to varying degrees. Although the economy can generate high or moderate output per capita, it relies on a limited set of industries and is highly sensitive to both external and internal shocks. In the case of Pavlodar and Karaganda, high average TotalMean values are due to isolated extreme years and do not reflect the sustainability of economic development. The third group, lagging cities with cumulative adverse effects, includes Taraz, Kokshetau, Aktau, Petropavlovsk, and Konaev, where TotalMean values are negative or close to zero. The population's economic security remains vulnerable and dependent on external sources.

The market is underdeveloped, and the volume of economic activity is insufficient to ensure a sufficient level of per capita economic output.

Next, Table 6 presents results for the CMD dynamics.

Table 6 General characteristics of the CMD dynamics for 2016–2024

City	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total Mean
Astana	2.00	2.41	2.06	2.02	1.90	2.51	6.06	3.61	2.61	2.80
Kostanay	11.91	8.01	10.80	6.40	11.96	6.81	13.41	17.48	5.56	10.26
Karaganda	36.39	82.69	−19.49	743.86	10.73	4.46	25.27	13.73	10.10	100.86
Taraz	−101.93	−7.53	14.37	1897.05	2.41	0.62	11.65	9.33	6.02	203.55
Ust-Kamenogorsk	30.35	8.43	18.52	19.81	8.61	2.53	39.91	45.12	11.77	20.56
Uralsk	8.52	3.03	6.58	16.03	2.06	2.01	13.18	7.36	9.22	7.55
Kokshetau	61.13	−246.60	−89.48	11.76	−10.38	−1.03	26.49	−0.06	6.92	−26.81
Atyrau	9.62	3.02	3.22	2.83	2.01	1.68	5.19	12.34	4.08	4.89
Aktobe	6.54	−0.63	2.37	1.47	4.41	9.23	−1.09	−4.40	1.81	2.19
Kyzylorda	5.33	4.68	1.94	2.96	3.08	1.35	8.69	10.78	7.45	5.14
Aktau	−770.54	−171.49	29.11	5.41	4.76	0.39	7.82	7.91	4.14	−98.05
Petropavlovsk	146.56	27.77	43.35	43.24	−50.67	29.84	−670.07	37.29	0.36	−43.59
Pavlodar	9.85	−364.01	94.21	60.59	19.67	6.77	52.48	75.00	60.48	1.67
Shymkent	6.89	−13.15	1.14	3.38	5.08	5.72	3.25	10.33	9.93	3.62
Turkestan	121.67	13.31	17.05	2.54	1.02	1.52	5.50	5.49	10.83	19.88
Almaty	8.02	4.18	5.48	5.57	0.46	2.96	9.80	6.98	8.39	5.76
Konaev	−33.62	3.90	3.67	0.12	−29.19	−2.40	20.30	−6.10	10.68	−3.63

Note: compiled by the authors

Overall, consumer market density dynamics for 2016–2024 are characterised by high unevenness and sharp fluctuations. In 2018–2019, some cities experienced extremely high values, with short-term growth in the consumer market. In 2020–2021, many cities experienced a decline in consumer market density. In 2022–2024, a general recovery in the consumer market was observed. Also noteworthy are cities with volatile dynamics, such as Karaganda, Taraz, Ust-Kamenogorsk, Pavlodar, Shymkent, and Petropavlovsk, characterised by extreme periods of consumer activity followed by significant contractions. Thus, the consumer market is dependent on specific sources of income and has limited demand stability. Cities with critically unstable dynamics and weak domestic demand stability stand out, such as Aktau, Kokshetau, and Konaev. Moreover, consumer market contractions in some years reach levels that are not offset by subsequent growth.

Based on the aggregated results, three groups of cities can be identified based on the level of consumer market development and stability. The first group includes cities with the highest TotalMean values and the lowest or no negative NegMean, such as Karaganda, Taraz, Ust-Kamenogorsk, Turkestan, and Kostanay, where the consumer market remains large at the end of the period. The second group, with a medium level of consumer market density and with moderate TotalMean and NegMean values, includes Astana, Almaty, Uralsk, Atyrau, Kyzylorda, Shymkent, and Pavlodar. The consumer market remains sensitive to economic shocks and changes in household income. The third group includes lagging

cities with low consumer market density, low or negative TotalMean, and a decline in NegMean, such as Aktau, Kokshetau, Petropavlovsk, and Konaev. The consumer market is underdeveloped, demand is unstable, and the economy is unable to expand consumer consumption sustainably.

Next, diagrams were constructed to determine the values of the IED that generate different values of the wage-productivity gap (WPG), economic output per capita (EPC), and consumer market density (CMD). The vertical axis reflects the IED of the indicators. The scales of the axes differ: for WPG, values are approximately unity (± 1), whereas EPC and CMD have larger magnitudes, as they measure output and consumer activity per capita. The horizontal axis shows the average values of the corresponding indicators, which can be used to assess whether income, output, or consumer market density increases with economic development. The orange line highlights the transition zone between low and positive values on the x-axis. It facilitates visual separation between cities where the IED remains weak or unstable and those with more pronounced economic development.

Figure 1 shows the results for the WPG indicator.

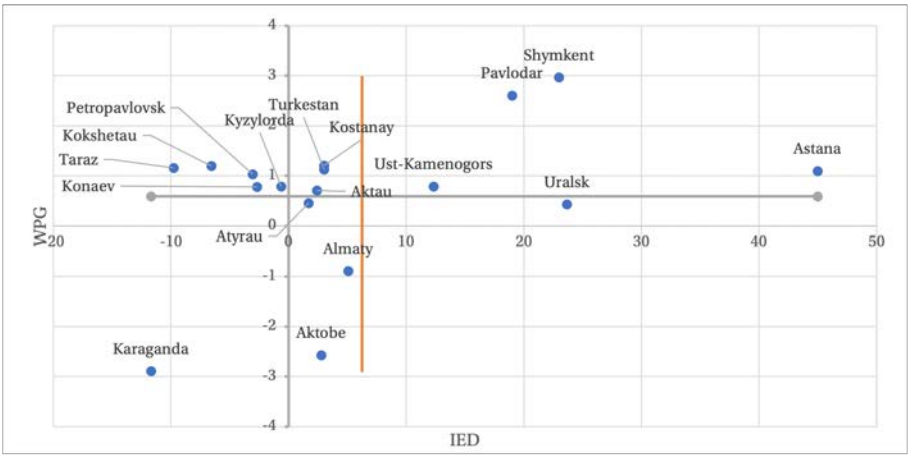

Figure 1 Integrated economic dynamics as a condition for the WPG for 2016–2024

The empirical results demonstrate that the relationship between economic activity and income levels varies significantly across cities, enabling the identification of several distinct development profiles.

1. Cities with high economic activity and income levels (IED above threshold; WPG > 1.0, typically ≈ 1.1˘3.0): Astana, Shymkent, and Pavlodar demonstrate high levels of economic development, reflected in both productivity and the scale of economic activity. The results indicate that IED values are significantly above the average (Astana ≈ 45; Shymkent $\approx$ 23; Pavlodar ≈ 19), while WPG exceeds 1.0, suggesting that wage growth is aligned with economic output. This indicates that expanding production, services, and business activity are effectively transmitted into household income through labour market mechanisms.2. Cities with high economic dynamics and disproportionate incomes (IED $\approx$ 6-7 and above; WPG < 1.0, typically $\approx 0.4 - 0.9$).

2. Cities with high economic dynamics and disproportionate incomes (IED above threshold; WPG < 1.0, typically $\approx$ 0.4–0.9): Uralsk, Almaty, and Aktobe exhibit substantial economic activity; however, income levels lag behind. Despite relatively high IED values

(Uralsk ≈ 24; Almaty ≈ 5–6), WPG remains below 1.0, indicating that economic output grows faster than wages. This suggests that a significant share of generated value is not redistributed to local workers. Possible explanations include income concentration in specific sectors, reliance on external or temporary labour, and the limited availability of stable, high-quality employment.

3. Cities with limited economic growth and relatively stable incomes (IED below threshold; WPG ≥ 1.0, typically $\approx 1.0 - 1.2$): Kostanay, Turkestan, Kokshetau, Petropavlovsk, and Taraz are characterised by moderate economic development and relatively stable income levels. Although economic growth remains constrained, WPG values close to or above 1.0 indicate proportionality between wages and output. Household incomes are supported by stable sources, including public sector employment, local enterprises, and government programmes, which mitigate the effects of weak economic expansion.

4. Cities with low economic activity and low incomes (IED $<\approx 6-7$; WPG < 1.0, negative in some cases): Karaganda and Aktobe exhibit low economic activity and disproportionately low household incomes. WPG values below 1.0 (and negative in some periods) indicate that even the existing economic output does not provide sufficient wages. The economy does not create sufficient stable, well-paid jobs, and household incomes remain sensitive to any deterioration in economic conditions. Structural constraints of the local economy are associated with an outdated production base, narrow specialisation, or a weak labour market. A high level of economic development does not guarantee high income levels. A favourable situation arises only in cities where wages are commensurate with the level of economic activity. Otherwise, economic growth either fails to support incomes or fails to create sustainable conditions for their increase.

Figure 2 shows the results for the EPC indicator.

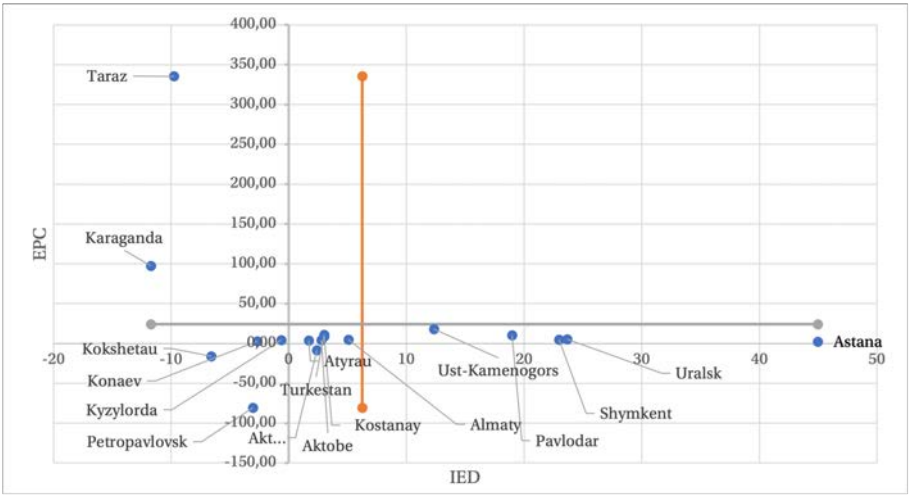

Figure 2 Integrated economic dynamics as a condition for EPC for 2016–2024

Assessing cities through the combined lens of IED and EPC highlights structural differences in how economic activity translates into per capita output and, consequently, potential income levels.

1. Cities with high economic dynamics and high per capita output (IED above the

sample average; EPC significantly above average, $> 20\breve{}30$): Astana, Shymkent, Pavlodar, and Ust-Kamenogorsk are characterised by strong economic dynamics combined with high per capita output. Elevated IED values alongside high EPC indicate that economic activity generates a substantial volume of goods and services relative to population size. This suggests that economic output is not diluted by demographic pressure and is effectively translated into income, employment, and consumption opportunities. High per capita output provides a solid basis for sustainable income growth.

2. Cities with high economic activity and limited per capita output (IED above the sample average; EPC at average or low levels, $\approx 0\breve{}15$): Uralsk and Almaty demonstrate active economic development; however, per capita output remains constrained. Despite relatively high IED values, EPC levels indicate that economic expansion is not sufficient to ensure broad-based improvements in living standards. This imbalance may be associated with rapid population growth and the concentration of production in sectors with limited income spillovers.

3. Cities with limited economic activity and high per capita output (IED below the sample average; EPC above average, >20): Karaganda, Taraz, and Turkestan exhibit weak or unstable economic dynamics despite relatively high per capita output. This pattern reflects structural dependence on capital-intensive industries or isolated large-scale activities that generate output without creating widespread employment. Consequently, high EPC does not necessarily translate into sustainable income or job creation, highlighting the limited inclusiveness of economic growth in these cities.

4. Cities with low economic activity and low per capita output (IED below the sample average; EPC low or negative): Kokshetau, Kyzylorda, Petropavlovsk, Konaev, and Aktau are characterised by weak economic performance and insufficient per capita output. Limited production capacity, underdeveloped labour markets, and strong dependence on external support constrain income generation. As a result, household incomes remain vulnerable to economic shocks and lack stability.

Figure 3 shows the results for the CMD indicator.

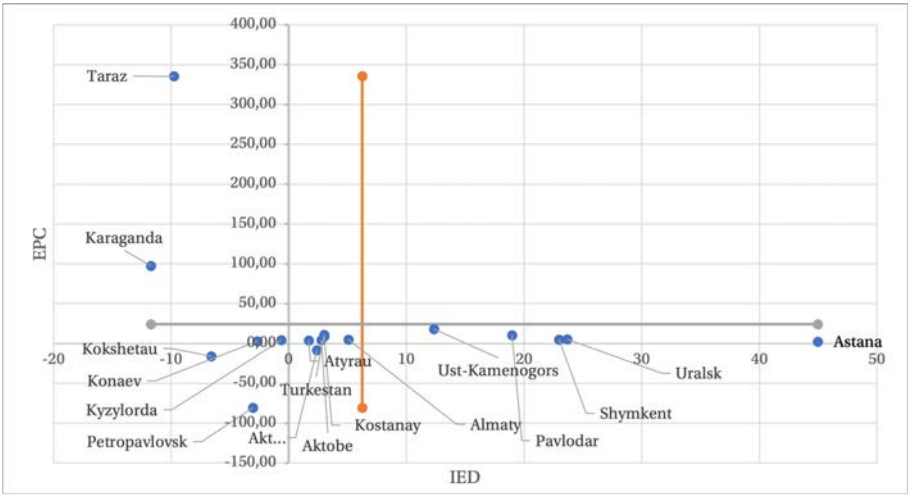

Figure 3 Integrated economic dynamics as a condition for CMD for 2016–2024

To analyze the relationship between economic dynamics and consumer market development, cities were classified into four groups based on the values of the IED and CMD.

1. Cities with High Economic Dynamics and High Consumer Market Density (IED > ≈ 6.5; CMD $> 10\check{}15$): Astana, Shymkent, Pavlodar, Kostanay, and Turkestan demonstrate both strong economic performance and a well-developed consumer market. A high level of economic activity creates conditions for stable and relatively high household incomes, which, in turn, stimulate active consumption. Consumer demand in these cities is intensive and diversified, reflecting both production growth and the everyday purchasing behavior of the population. In this group, economic development effectively translates into domestic demand, making consumption an independent and stabilizing factor of economic sustainability.

2. Cities with High Economic Activity and Limited Consumer Market Density (IED $>\approx 6.5$; CMD $\approx 2\check{}7$): Almaty, Uralsk, and Aktobe are characterized by relatively strong economic activity; however, the consumer market remains underdeveloped compared to expectations. Despite the scale of economic activity, consumer demand remains structurally constrained. This may be explained by income concentration among specific population groups, the outflow of consumption (e.g., online purchases or spending in other regions), or the insufficient development of the retail and service sectors. As a result, economic growth does not fully translate into a sustainable domestic consumer base.

3. Cities with Limited Economic Activity and High Consumer Market Density (IED $<\approx 6.5$; CMD > 10): Karaganda, Taraz, Ust-Kamenogorsk, and Petropavlovsk exhibit moderate or unstable economic dynamics combined with relatively high consumer market density. In these cities, consumption remains active even in the absence of strong economic growth. This is supported by factors such as previously accumulated household income, government transfers, stable employment in large enterprises, and the inertia of consumer behavior. Consequently, consumption creates a temporary perception of stability and partially offsets economic fluctuations; however, it does not generate sustainable conditions for long-term income growth and economic development.

4. Cities with Low Economic Activity and Low Consumer Market Density (IED $<\approx 6.5$; CMD low or negative): Kokshetau, Kyzylorda, Aktau, and Konaev are characterized by weak economic performance and a poorly developed consumer market. In these cities, economic activity does not generate sufficient income, resulting in limited consumer demand. The retail sector remains compressed, business activity is low, and there is a high dependence on external financial support. The analysis shows that sustainable income generation depends not only on economic growth itself but also on the ability of the economy to convert income into domestic consumption. In such conditions, consumer activity remains structurally constrained and highly vulnerable to external shocks.

5 | CONCLUSION

The purpose of this article was to identify why household incomes do not increase with economic growth. The research results showed that growth in production, services, and business activity alone does not guarantee improved living standards unless economic development is accompanied by an expanding labour market and increased consumer activity.

The most favourable situation occurs in cities where jobs are created, and regular household income is generated. Under such conditions, robust consumer demand is rising. In cities with weak labor and consumer markets, economic activity is short-term and does not lead to long-term improvements in the population's well-being.

Even when incomes remain relatively stable despite low economic growth, employment opportunities are limited in the least favourable situations, expansion of production or services does not lead to the creation of sustainable, well-paid jobs, and a significant portion of the economic benefits does not accrue to the local population.

Thus, the study's results demonstrate that, regardless of a city's size or the scale of its economic activity, long-term, high-quality development is based on developed labour and consumer markets. The analysis revealed that when the economic dynamism indicator reaches a threshold of approximately 6–7, economic activity begins to be reflected in household income and well-being. In cities with indicator values in this range or above, economic development was accompanied by growth in household income, as the expansion of production, services, and business activity was supported by a functioning labour market and the generation of regular income. In contrast, in cities with lower indicator values for economic activity, household income did not increase comparably, indicating a weak link between economic development and well-being. Thus, the calculations showed that reaching this threshold reflects the conditions under which economic activity begins to translate into real household income. Further research should consider integrating economic dynamics indicators into a larger group of cities and over longer time periods. It should incorporate additional indicators reflecting the structural characteristics of regional economies.

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