# CITIES IN EUROPE AND CENTRAL ASIA

GEORGIA

⚙ METHODOLOGY

This Country Snapshot was produced as part of an Advisory Services and Analytics (ASA) work developed by the Urban, Social, Rural and Resilient Global Practice (GPSURR). The objective of this ASA is to analyze economic, spatial and demographic trends in the urban systems of countries in Europe and Central Asia. City-level population data was obtained from the *(or validated by)* National Statistics Institute In the absence of city-level economic and spatial data over the period of analysis, night-light (NLS) satellite imaging was used to assess spatial and demographic trends of cities. In previous studies, NLS intensity has been found to be positively correlated with economic activity-measured by GDP. Regional-level regressions of NLS and regional GDP were conducted to assess validity of using NLS as a proxy for economic activity in Georgia Results showed a very significant and positive correlation between NLS intensity and GDP levels which proved to be robust to different model specifications. In the case of Georgia GDP to NLS elasticity was found to be 0.883 *(an increase in light intensity of 1 percent is expected to be linked with a0.883 percent increase in GDP)*. This Country Snapshot presents urban system level results; due to measurement errors economic and spatial city-level results should be analyzed with caution, and when possible, additional city-level data sources *(i.e., satellite imagery, firm level data, etc.)* should be consulted to corroborate and confirm results. This snapshot considered all settlements *(54)* which are considered as being 'cities' within Georgia. Demographic trends are available for all cities but NLS data analysis is only available for 4 cities as the remaining settlements did not produce enough light to be considered "urban" by NLS standards. Similar assessments made in other countries suggest that NLS are able to capture most settlements with 30,000 inhabitants or more. For additional information on this ASA please contact Paula Restrepo Cadavid (prestrepocadavid@worldbank.org) or Sofia Zhukova (szhukova@worldbank.org)

WORLD BANK GROUP
Social, Urban, Rural & Resilience

UKaid
from the British people

DEMOGRAPHICS

		BEFORE	RECENTLY
Fertility Rates	Georgia	2.20[1]	1.80[2]
	ECA	1.90[1]	1.72[2]
Life Expectancy	Georgia	70.03[1]	74.07[2]
	ECA	72.07[1]	76.78[2]
% of Population Above Age 65	Georgia	9.10[1]	14.56[2]
	ECA	11.41[1]	15.16[2]
Population Growth (Average Annual %)	Georgia	-0.68[3]	0.14[4]
	ECA	0.26[3]	0.34[4]
Urban Population Growth (Average Annual %)	Georgia	1.08[3]	0.25[4]
	ECA	0.41[3]	0.59[4]
Urbanization Level (%)	Georgia	55.27[1]	53.46[5]
	ECA	67.70[1]	70.00[5]
Annual Urbanization Rate (%)	Georgia	0.75[3]	-2.11[4]
	ECA	0.13[3]	0.24[4]
City Average Population	Georgia	40,216[6]	43,018[5]
	ECA	72,515[6]	75,132[5]
% Cities With More Than 100,000	Georgia	7.41[6]	7.41[5]
	ECA	12.97[6]	20.02[5]
% Cities With More Than 500,000	Georgia	1.85[6]	1.85[5]
	ECA	2.03[6]	2.27[5]
% Cities losing Population	Georgia	94.44[3]	31.48[4]
	ECA	59.58[3]	61.58[4]

Population 2014: < 10,000; 10,001 - 25,000; 25,001 - 50,000; 50,001 - 100,000; > 100,000

Percent Change 2002-2014: < -5.0; -4.9 - 0.0; 0.1 - 4.9; > 5.0
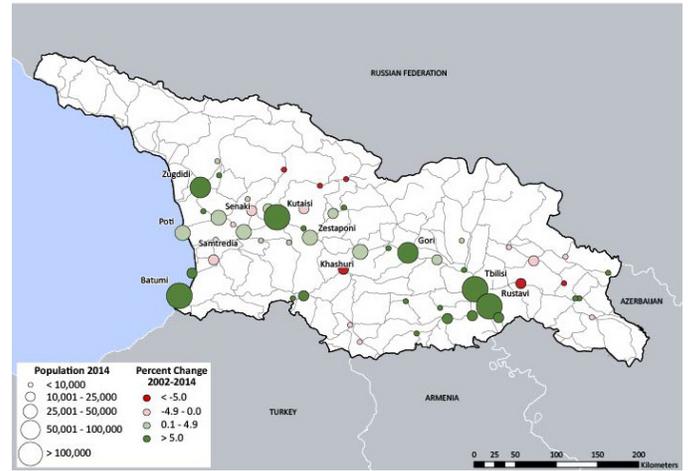
SPATIAL

|		BEFORE	RECENTLY
Built Up Area (100,000km²)	Georgia	978.01[7]	1,878.51[2]
	ECA	86,265[7]	163,124[2]
Built Up m² Per Capita	Georgia	203.66[7]	419.60[2]
	ECA	186.38[7]	338.81[2]
Built Up Area Growth (%)	Georgia		92.07[8]
	ECA		89.10[8]
Built Up m² Per Capita Growth (%)	Georgia		106.02[8]
	ECA		81.79[8]
Number of Cities in Analysis	Georgia		54[9]
	ECA		2,712[9]
Number of Identified Cities (NLS)	Georgia		3[9]
	ECA		3,883[9]
Number of Growing Cities (NLS Area)	Georgia		1[9]
	ECA		1,645[9]
Number of Agglomerations (NLS)	Georgia		1[9]
	ECA		352[9]
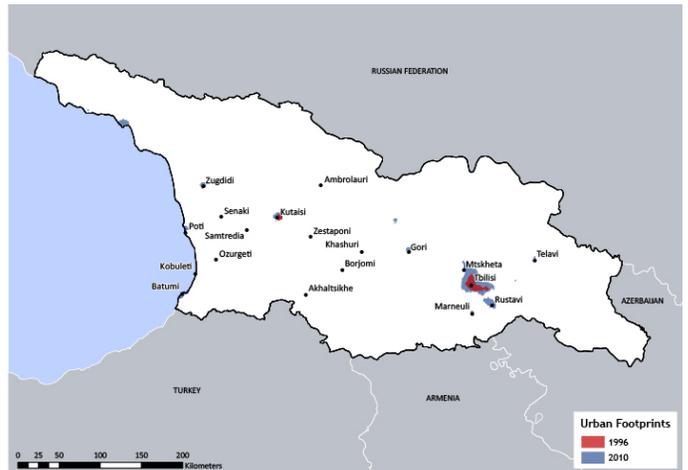
This section uses data from the Global Human Settlement layer (GHSL) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.

Urban Footprints: 1996; 2010

ECONOMICS

		BEFORE	RECENTLY
Average Annual GDP growth (%)	Georgia	6.98[3]	6.06[4]
	ECA	2.04[3]	1.49[4]
Average Annual GDP per capital growth (%)	Georgia	-6.20[3]	5.91[4]
	ECA	1.77[3]	1.14[4]
Estimated contribution of urban GVA to GDP growth (%)	Georgia		65.96[4]
	ECA		—
Unemployment Rate (%)	Georgia		14.56[2]
	ECA		9.45[2]
Poverty rate (% at national poverty line)	Georgia		4.20[2]
	ECA		—
Urban to rural GVA ratio	Georgia		1.97[2]
	ECA		—
Urban NLS Intensity Growth (%, annual average)	Georgia	-6.85[10]	20.30[11]
	ECA	-1.17[10]	2.03[11]
% City Economies Growing (in NLS intensity)	Georgia	0.00[10]	100.00[11]
	ECA	21.82[10]	74.85[11]
GDP to NLS Elasticity	Georgia		0.83[12]
	ECA		0.37[12]

Compound Growth Rate, 1996-2010: High: 0.20; Low: -0.05
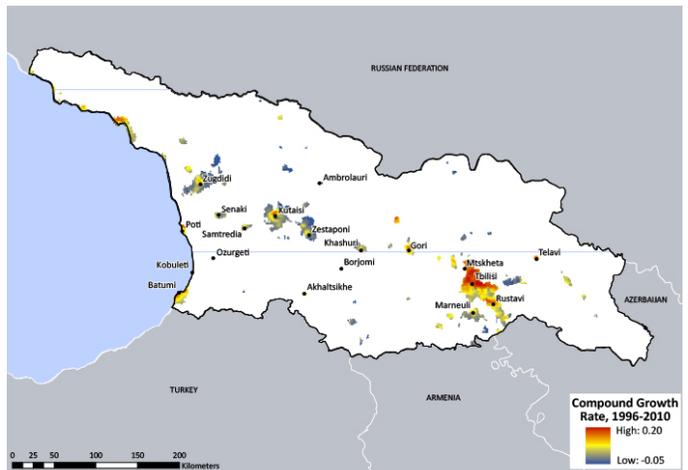
[1] 1989, [2] 2013, [3] 1989–2002, [4] 2002–2014, [5] 2014, [6] 20002, [7] 1990, [8] 1990–2013, [9] 2000–2010, [10] 1992–2000, [11] 2000–2012, [12] 2000–2011.

Over the past two decades Georgia experienced dramatic changes in its population dynamics. Between 1989 and 2005 the country experienced population decline. In 2005, positive growth rates were observed again. The total effect implied a decrease, between 1989 and 2014, of 2 percent of the population. The sharp decline was fueled by out migration as Georgia was classified as one of the countries with the largest number of emigrants with respect to the population by the World Bank. The overall trend has been accompanied by an aging population, decreasing fertility rates and higher life expectancy. Fertility rates have been declining and they are below replacement since 1992.

Urbanization levels have also undergone diverse changes, with an initial decrease of urbanization between 1989 and 2002, led by a decrease in the urban population, followed by an increase between 2002 and 2014, led again by growth in the urban population. Between 1989 and 2002, the rural population decreased from 2.1 to 2million *(a 5 percent decline)* while the urban population decreased from 2.6 to 2.2 million *(a 20 percent decline)*. The interaction of these dynamics resulted in an decrease of 3 percent in the urbanization levels. Between 2002 and 2014, the rural population recovered to reach 2.09 million *(a 0.3 percent growth)*, while the urban population grew to 2.3 million *(4 percent increase)*. As a result, in 2014 urbanization levels increased to 53 percent. The total effect over the whole period is a slight decrease in the urbanization levels.
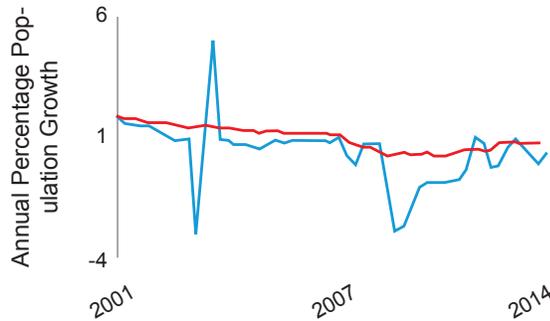
Population Growth, 2001–2014

— Georgia   — ECA *(Developing Only)*
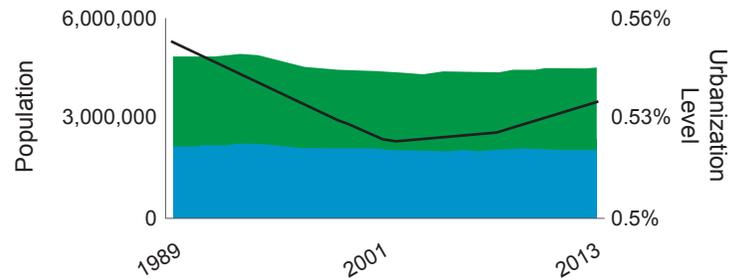
— Rural Population   — Urban Population   — Urbanization Level

DEMOGRAPHICS OF THE URBAN SYSTEM

Georgia's urban system is composed mainly of towns but most of the urban population lives in cities with more than 100,000 inhabitants. 31 percent of the cities in the urban system are shrinking over the last decade. This is fewer than the regional average, but it is not a insignificant share. However, city population growth and decline is not homogeneous across the country. All cities larger than 50,000 are growing in population in the last decade, while smaller cities and towns are declining. The only agglomeration found in the country has grown in the last decade, although not as much in percentage terms as other smaller cities. A large proportion of the urban population is concentrated around the capital, Tbilisi.

DISTRIBUTION OF CITIES BY CITY SIZE: **2014**

0%   50%   100%
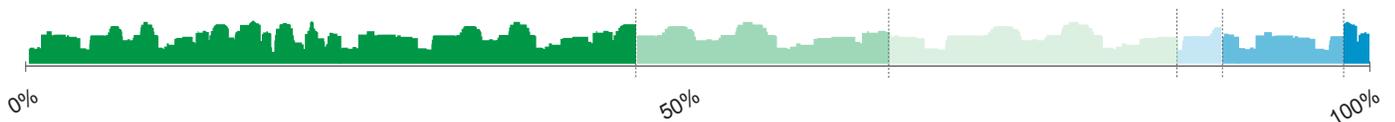
URBAN POPULATION DISTRIBUTION BY CITY SIZE: **2014**

0%   50%   100%
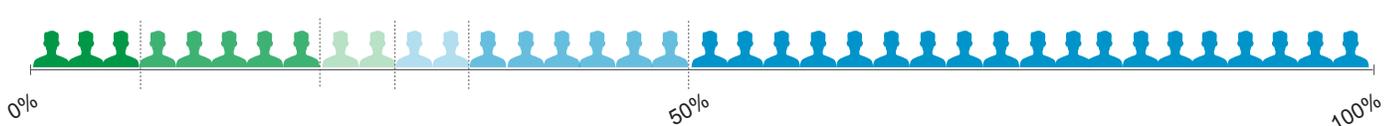
■ Small Town (<10k)   ■ Mid-Size Towns (10k–20k)   ■ Large Towns (20k–50k)   ■ Small Cities (50k–100k)   ■ Mid Size Cities (100k–500k)   ■ Major Cities (>500k)

3

LARGEST CITIES BY POPULATION

CITY	POPULATION 2014	% CHANGE 2002–2014
Tbilisi	1,144,400	5.80
Kutaisi	197,000	5.93
Batumi	161,200	32.34
Rustavi	122,900	5.60
Zugdidi	74,800	8.57
Gori	54,700	10.47
Poti	47,800	1.38
Samtredia	30,100	1.14
Khashuri	29,400	2.94
Senaki	28,600	1.84
Zestaponi	25,200	4.31
Marneuli	24,100	20.11
Telavi	20,900	-4.15

LARGEST URBAN AGGLOMERATIONS

AGGLOMERATION MAIN CITY	POPULATION 2014	% CHANGE 2002–2014	CITY COUNT
Tibilisi	1,154,400	5.96	2

FASTEST GROWING CITIES

CITY	POPULATION 2012	% CHANGE 2002–2014	BELONGS TO AN AGGLOMERATION	AGGLOMERATION
Tsalka	2,500	43.60	No	N/A
Batumi	161,200	32.34	No	N/A
Mtskheta	10,000	29.57	Yes	Tbilisi
Gardabani	15,100	27.34	No	N/A
Marneuli	24,100	20.11	No	N/A
Kareli	8,400	16.91	No	N/A
Bolnisi	11,600	16.65	No	N/A
Terjola	6,300	14.78	No	N/A
Lagodekhi	7,800	13.45	No	N/A
Dmanisi	3,800	10.88	No	N/A
Khobi	6,200	10.64	No	N/A
Gori	54,700	10.47	No	N/A
Tsnori	6,700	10.45	No	N/A

SPATIAL TRENDS OF THE URBAN SYSTEM

All of the identified cities (3 out of 54) underwent growth in footprint area. For these cities, growth was substantial with an average increase in area of 96 percent. The Tbilisi agglomeration has seen an increase of its area by 75 percent, while 'single cities' have grown by 98 percent on average. Footprint growth is mainly concentrated in cities in the west, along the black sea coast. The combination of urban population decline and urban area growth in certain cities in Georgia is suggestive of urban sprawl. However, as only few cities of Georgia's urban system were identified using nighttime lights, it is difficult to diagnose a widespread incidence of sprawl.

Note: Night-lights are used to define urban footprints and follow their change over time. A urban threshold *(above which a certain pixel is considered urban)* is estimated for each country and used to delimit cities' footprints. Agglomerations as defined by NLS are composed of cities whose NLS footprint merges. Single cities are cities who do not belong to any agglomeration.
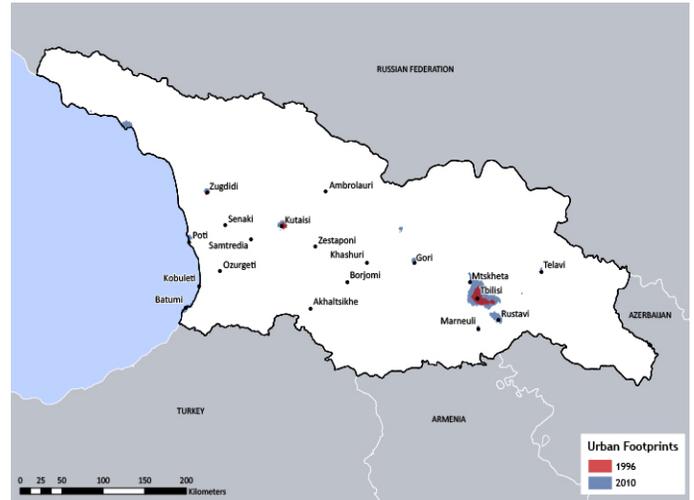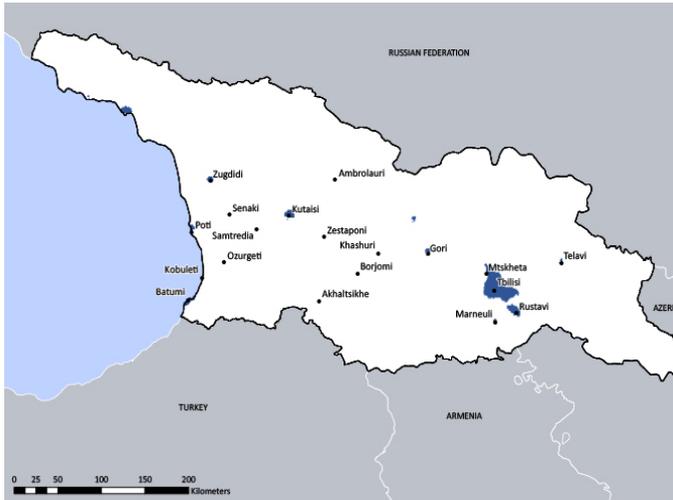
ECONOMICS OF THE URBAN SYSTEM

Urban areas in Georgia play an important role in economic growth, but not as predominant as in other countries in the region. Estimates suggest that urban production is almost 2 times larger than rural production while urban population is only 1.14 times larger than rural population. This reflects a somewhat higher level of productivity in urban areas. However, this number is smaller than in other countries in the region. Distribution of economic activities across the country can be observed spatially by analyzing light intensity and changes of light intensity over time. Following population growth, growth in lights had been observed along the black sea cost. An important increase in light intensity can also be observed in and around Tbilisi.

Note: Night-light intensity is being used as a proxy for economic activity at the city-level. For more information on the methodology please refer to page 1 of this snapshot. Gross value added (GVA) data by sector, as reported by the United Nations Statistics Bureau, is used to measure urban and rural production as a part of total production. The sectors were divided into those that are urban and those that are rural using the International Standard Industrial Classification of all economic activities (ISIC) , rev. 3.

Nighttime Lights 2010
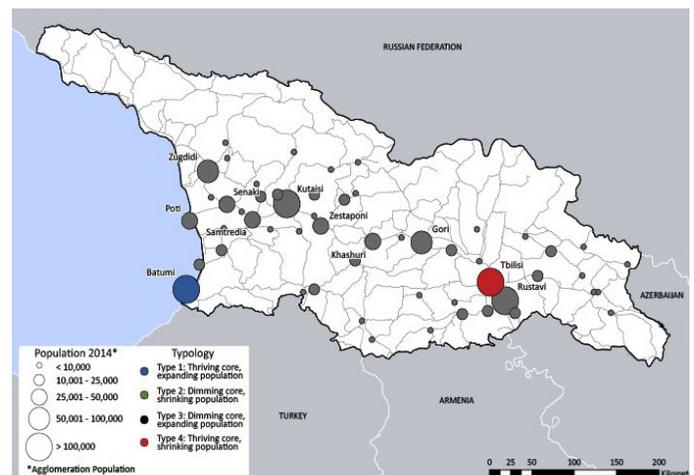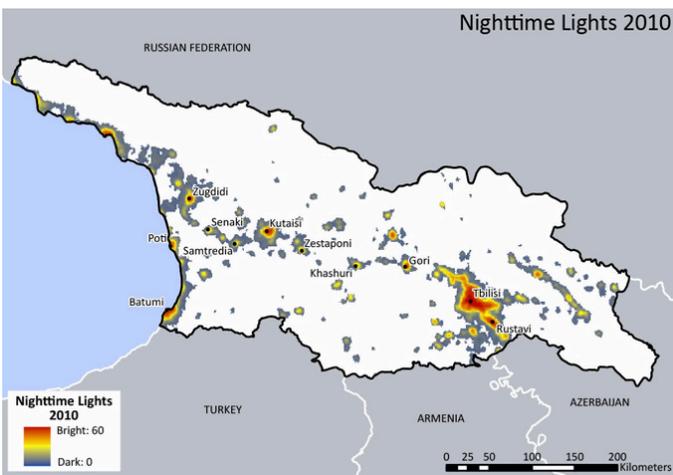
Two city typologies were created based on the light emitted by cities in 2000-2010 and population trends *(Please refer to note below)*. These typologies are intended to shed lights on spatial, economic and demographic trends of the country's urban system.

Typology 1 divides cities depending on whether they emit enough light to be considered as urban—by NLS standards. 5.56 percent of the cities in the country were found to emit enough light to be consider urban in both periods (Identified); 12.96 percent were only considered urban by NLS standards in 2010 *(Emerging)*; 81.48 percent were not considered as urban in both periods *(Not identified)*; and none were considered as urban only in the first period of analysis *(Submerging)*. Typology 1 results are similar to those found in other ECA countries with mainly cities above 30,000 inhabitants being considered urban by NLS standards and most cities above 50,000 being Identified.

Typology 2 classifies Identified cities in four types based on their nightlight trends *(dimming or thriving)* and population trends *(growing or declining)*. 100.00 percent of the identified cities have a growing population and growing economic activity *(type 1)*. As mentioned previously, these results are only valid for 2 cities that were identified in two periods, so interpretation must be made with caution.

TYPOLOGY 1			
TYPOLOGY 1	**DESCRIPTION**	**NUMBER**	**PERCENTAGE**
Identified	City emits enough light in both 2000 & 2010	3	5.56
Emerging	City emits enough light in only 2010	7	12.96
Submerging	City emits enough light only in 2000	0	0.00
Non-Identified	City does not emit enough light in both 2000 & 2010	44	81.48

TYPOLOGY 2			
TYPOLOGY 2	**DESCRIPTION**	**NUMBER**	**PERCENTAGE**
Type 1 (Blue)	Growing population & growing economic activity **(thriving core)**	2	100.00
Type 2 (Green)	Declining population & declining economic activity **(dimming core)**	0	0.00
Type 3 (Black)	Growing population & declining economic activity **(thriving core)**	0	0.00
Type 4 (Red)	Declining population & growing economic activity **(dimming core)**	0	0.00

|	**TYPE 1:** Growing Population & Growing Economic Activity	**TYPE 2:** Declining Population & Declining Economic Activity	**TYPE 3:** Growing Population & Declining Economic Activity	**TYPE 4:** Declining Population & Growing Economic Activity
Population 2014 (000s)	**657.80** (702.29)	N/A	N/A	N/A
Average Annual Population Growth (% 2002-2014)	**1.59** (1.55)	N/A	N/A	N/A
Total NLS Value in 2010 (000s)	**31.44** (39.72)	N/A	N/A	N/A
NLS per Capita (2010)	**0.03** (0.02)	N/A	N/A	N/A
NLS Growth (% 2000–2010)	**255.92** (9.17)	N/A	N/A	N/A
Examples of Cities	**Batumi, Tbilisi agglomeration**	N/A	N/A	N/A

A third dimension is added to **Typology 2** classification to review the interaction between spatial, economic and demographic trends across the urban system in Georgia. Unfortunately, given the small number of cities for which we can calculate **Typology 2**, it is not possible to detect reliable patterns. The table *(right)* presents summary statistics for **Typology 2 cities**. As can be observed, the city with growing population and economic activity *(Type 1, Batumi)* is smaller and less productive *(measured as NLS per capita)* than the **Type 4 city** (Tbilisi).

POPULATION AND ECONOMIC DYNAMICS*

GEORGIA

Annual Percentage Population Growth (y-axis): 02, 0, -02
Annual Percentage NLS Growth in Core (x-axis): -300, 0, 300
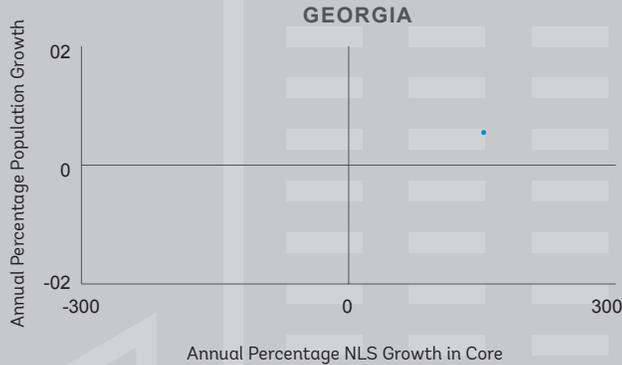
* Econ growth is NLS growth (2000–2010);
  Population growth is annual growth (2002–2014).

SPATIAL AND ECONOMIC DYNAMICS*

GEORGIA

Percentage Area Growth (y-axis): 300, 0, -300
Percentage NLS Growth in Core (x-axis): -300, 0, 300
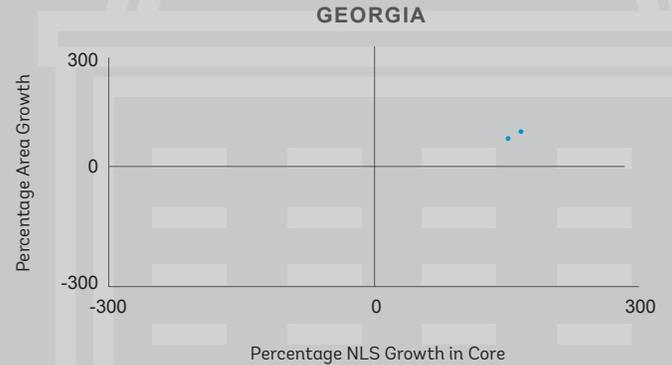
* Area growth in NLS footprint growth (2000–2010);
  Econ growth in NLS growth (2000–2010).

POPULATION AND SPATIAL DYNAMICS*

GEORGIA

Annual Percentage Population Growth (y-axis): 02, 0, -02
Annual Percentage Area Growth (x-axis): -300, 0, 300
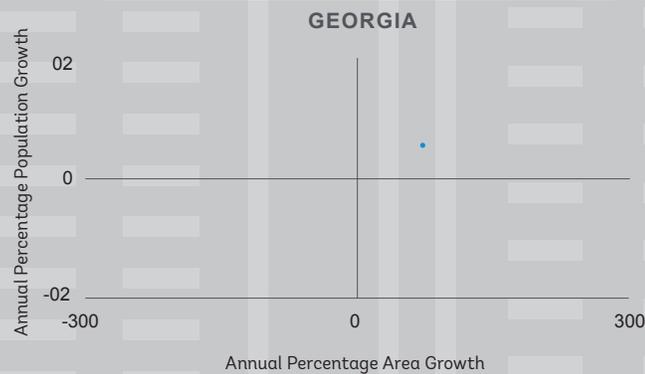
* Area growth is NLS footprint growth (2000–2010);
  Population growth is annual average growth (2002–2014).

Type 1: Growing population, growing economic activity

Type 2: Declining population, declining economic activity

Type 3: Growing population, declining economic activity

Type 4: Declining population, growing economic activity

7

CONCLUSIONS

Georgia experienced an important decline in population during the first decade of transition followed by a recovery during the last decade. This recovery has been led by urban population, which has implied a recovery of urbanization levels up to levels close to those shown before the decline started.

Cities in Georgia play an important role in the country's economic growth. However, its weight in total production is lower when compared to other countries in the region, suggesting that there should be room to increase productivity in urban areas. Additional conclusions on the economic performance of individual cities are difficult to make because NLS were only identified for 3 cities—2 of which belonged to an agglomeration—in the period of analysis. The identified cities are the Tbilisi agglomeration and Batumi. The Tbilisi agglomeration is comprised by Tbilisi and Mtskheta, as identified by NLS. Tbilisi presents a growing population over the last decade, and a growing economic activity in the core. Batumi, is growing in both dimensions, although it remains smaller and less productive than Tbilisi. There is an important growth cluster in the Tbilisi agglomeration. Despite initial population decline, this agglomeration has recovered, and presents significant growth in area, economic activity and population. Spatially, most of the growth in economic activity captured by NLS is found in the Tbilisi agglomeration, in Kutaisi, and in cities along black sea corridor.

Moving forward, Georgia will likely continue to experience a re-organization of its urban system, with the larger cities absorbing most population growth and smaller cities and town continuing to decline in population. This will require a dual approach to urban development which focus on the different challenges linked to the urban growth of some of its cities and the decline of others. For shrinking cities, the country needs to put in place the right national policies to better manage the population decline. At the subnational level, local authorities will need to re-assess how infrastructure is planned and maintained and the way services are financed and delivered. City leaders should also aim at managing population decline in an efficient and harmonious way making the best out of it, for example, turning brownfields into public space and optimizing public transportation. In parallel, Georgia also needs to recognize the role of urban areas in economic growth and make sure that they have the right tools to reach their full potential. To achieve increased productivity in urban centers, the right mix of good governance, a beneficial business climate, and an efficient provision of public goods, usually in the form of public services and infrastructure, is necessary so that agglomeration economies are fostered and congestion costs reduced. In urban areas experiencing population growth, cities should focus on adapting infrastructure and services to ensure that newcomers are well absorbed and integrated into the city and manage peri-urban growth to avoid sprawl, etc.