

Space: The Final Frontier

Paul Krugman

The Russian Federation is divided into 7 federal districts, which themselves can be divided in 83 regions – 47 have the political status of an oblast¹ (one of them autonomous), 21 have the status of a republics, 9 that of a krai, 4 are autonomous okrugs and 2 are federal cities.² The land mass of all regions of the Russian Federation taken together spans an area of 17,075,400 km². Figure 2.1 presents an overview of all the regions of the Russian Federation and their legal status.

Geographically, Russia borders 14 states – 16 if maritime borders with the United States and Japan are counted as well. From an economic-political perspective the Russian Federation is therefore a direct neighbor of the four economically leading centers – the USA, Japan, China and the European Union. From a trade theoretical and new economic geographies point of view, this is an ideal prerequisite for long-term welfare gains.

However, traditional trade theories and the new economic geography err in a very essential aspect. The assumption of a spaceless economy is invalid when considering the geographically largest economy in the world that is as internally diversified as

¹Note, if a translation for an expression borrowed from the Russian language is not available or does not suit the requirements of this study, a transliteration of the original expression is used. The English-American transliteration scheme is applied. The same holds for names of regions, natural people, firms and institutions of the Russian Federation.

²In this study, however, only 80 regions are considered. The Nenets Autonomus Okrug is considered a part of the Arkhangelsk Oblast and the okrugs Khantia-Mansia and Yamalia are considered parts of the Tyumen Oblast. With this regional dissemination statistics are most comprehensively available for all regions and politically the named oblasts already compose part of the okrugs.

the Russian Federation. To give an introduction on barriers not only to trade but to international and interregional cooperation as well, the following six sections discuss different aspects of its internal diversity.

2.1 Geographic Structure

Spanning an area of more than 17,075,400 km² the Russian Federation is the largest nation in the world. Nevertheless, with a population density of only 8.37 inhabitants per square kilometer³ it is also one of the most sparsely populated ones.⁴

However, this section focuses less on the inhabitants of the Russian Federation than on the land.⁵

Approximately 30 % of the land mass of the Russian Federation or 3,952,550 km² lies in Europe while the remaining 13,122,850 km² is situated in Asia. The land mass of the Russian Federation is accompanied by maritime claims of 22.7 km of territorial seas⁶ and a 1.2 million km² portion of the Arctic Ocean as its territory.⁷

A special role is taken on by Kaliningrad as well as the Sakhalin Oblast.

The Kaliningrad Oblast is a Russian enclave situated between Poland and Lithuania on the coast of the Baltic Sea, with no direct overland route to the Russian mainland. Traffic by sea is only possible through the harbor in St. Petersburg.

The island of Sakhalin and the Kurillean islands that are administrated by the oblast of Sakhalin are also an exception. No direct overland connection exists between any part of the oblast and the rest of the Federation and traffic by sea is dependent upon the season and relatively limited. Besides, Japan still holds a claim to the Kurillean islands and does not accept them as part of the Russian Federation.

Similar arguments hold for the northern islands that are foremost parts of the Archangelsk Oblast, the Krasnoyarsk Krai or the Republic of Sakha. Nevertheless, in these cases the islands are only part of the region and not its major part. Furthermore, in those regions the regional capital is situated on the Russian

³By the end of 2011.

⁴If not marked otherwise, all data cited in this study and used to generate figures and tables refers to official publicly available publications by Rosstat and can be found in the *Regiony Rossii* regional statistical yearbook. See [Rosstat \(2003, 2008, 2011\)](#) or [\(1998\)](#). If conflicting data is reported by different sources, as long as not mentioned otherwise, the official data from Rosstat is taken.

⁵Note that the geography and related characteristics of the Russian Federation are special in their way. As argued in the introduction by using the Russian proverb, at least in part Russia can be compared with Canada, which also possesses a large land mass, while being sparsely populated and its natural resource reserves are situated in less developed areas of the country. For those reasons Canada faced similar problem in the past to those faced by the Russian Federation in the past two decades and still today. Analyses like those of [Coulombe and Lee \(1995\)](#), [Coulombe and Tremblay \(1998\)](#) or [Coulombe and Day \(1999\)](#) that take a look at development patterns in Canada can in part be used and insights transferred, where Russian geography or even natural resource endowments are concerned.

⁶See [MONRF \(2012\)](#).

⁷See [Novosti \(2012\)](#).



Fig. 2.2 Time zones of the Russian Federation

mainland. Compared to the rest of the regions proper they are only sparsely populated.

The Russian Federation shares its border of a total of 20,017 km with 14 countries and has a coastline of approximately 37,653 km. Including the lakes Ladogo and Onega in the northwest and the lake Baikal in the southeast, the Russian Federation also contains the largest fresh water reserves in the world.

Due to its large size the Russian Federation spans 11 time zones. A detailed illustration is shown in Fig. 2.2 below. The Russian base time is Moscow time and other time zones are considered accordingly. The Moscow time zone is the Universal Time Coordinated (UTC) plus 4 h.⁸

As can be seen in the figure, Russia features a number of peculiarities considering the distribution of its time zones. A number of regional borders exist with a time difference of two instead of 1 h. Considering the regional layout underlying the time zones, though, this does make sense as it allows for most regions to be situated in one time zone only. The Republic of Sakha is the only exception as – due to its size – it spans three time zones.

The extent of the Russian Federation from west to east reaches nearly 9,000 km and from north to south nearly 4,000 km, so it is no small wonder that all of the climate zones as defined by the Köppen-Geiger climate classification,⁹ except for the Tropics, can be found within the Russian Federation. Figure 2.3 shows the extent of the different climate zones.

⁸Since the reforms in 2011.

⁹See Köppen (1931) for a detailed description of the classification.



Fig. 2.3 Climatic zones of the Russian Federation

Most areas of the Northeastern regions are situated in a region of sub-arctic climate while semi-arid or warmer continental climates can only be found in the southern parts of the Caucasian area. Most of central western Russia is situated in a zone of humid continental climate, which as a precursor to future sections is one of the reasons why most of the population is situated there.

Finally, Fig. 2.4 shows the geographical layout of the Russian Federation as dictated by its geological formation.¹⁰ The most pronounced landmarks are the mountain ranges of the Urals in Western Siberia – dividing the European and Asian parts of the Federation – and the Altai ranges in the southern parts – a natural border between the Russian Federation and China, that extend all the way north across eastern Siberia into the easternmost parts of the Federation in Chukothia. Also visible are the mountain ranges of the South-Caucasian that make up the southern border to the Caucasian states and the Middle East.

Considering the insights gained from the distribution of climate zones, it can be said that those areas with a hostile climate are usually accompanied by a hostile geography as well. Both of those aspects are important in a later section, where not only the distribution of metropolitan areas but the situations of labor in the different regions of the Russian Federation are discussed.

¹⁰The figure is public domain and based on the ETOPO2 data. For the data set, see [ETOPO2v2 \(2012\)](#). The figure has been published on [Dedering \(2012\)](#).

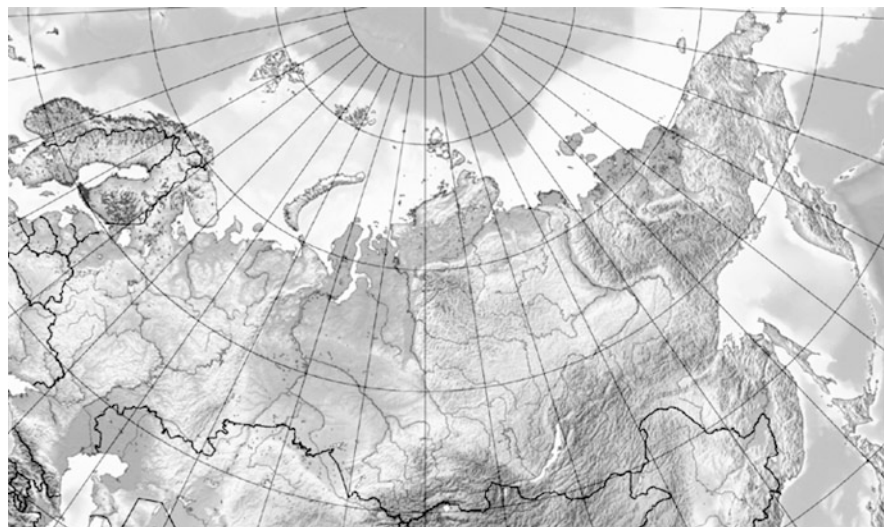


Fig. 2.4 Geographic layout of the Russian Federation

2.2 Regional Resource Endowments

In Western European states, post-Soviet Russia is mostly known as a supplier of natural resources. However, not only from a trade perspective, but from a domestic one as well, the natural resource sectors are of eminent importance for the economic development of the Russian Federation. Table 2.1 provides an overview of important natural resources and the amounts the Russian Federation has mined and quarried in previous years.¹¹ The table underlines that Russia is a major producer of crude oil and natural gas. The table also indicates that in Russia a number of additional natural resources besides oil and gas are exploited in considerable amounts. In this context the second and fourth columns are most insightful. While the second column gives the amount of the resources mined or quarried, the fourth column gives the corresponding global rank of the Russian Federation in the sector, thereby putting the output numbers of the Russian Federation in an international context and showing its leading role in resource sectors besides oil and gas.

The last column is of interest as it makes clear that though Russia is one of the most important producers of oil and gas, it is even more important regarding other precious and non-precious metals and resources. It is noteworthy for example that Russia ranks first in the production of raw diamonds and fourth in the production of gold. In the production of non-precious metals, though, Russia ranks only fifth in the mining of iron ore and is not even among the top 20 producers of copper worldwide.

¹¹The table is based on data from [US Geological Survey \(2012\)](#).

Table 2.1 Mining and quarrying in the Russian Federation

Resource	Output	World share (%)	World rank	Year reported
Crude oil	10,210,000 Bbl/day	11.0	2.	2010
Natural gas	677 Bcm	20.0	2.	2011
Coal	333.5 Mt	4.0	5.	2011
Uranium	3,562 t	6.6	6.	2010
Gold	200 t	7.4	4.	2011
Paladium	85 t	41.1	1.	2011
Platinum	26 t	13.5	2.	2011
Silber	1,400 t	5.9	4.	2011
Aluminum	4 Mt	9.1	2.	2011
Copper	750 Kt	4.5	7.	2009
Pig iron	48 Mt	4.4	3.	2011
Nickel	280 Kt	15.6	1.	2011
Zinc	225 Kt	2.0	11.	2009
Diamonds	15 Mct	23.4	2.	2011

It ranks first in the production of Nickel and second in the production of Aluminum and Paladium.

The high ranks in Nickel and Paladium production are important on two counts; almost all of the production of Paladium and Nickel is controlled by one company, Noril'sk Nickel. Additionally, the export of Paladium alone is responsible for approximately 2 % of the Russian exports in the year 2011, supplying nearly half of the global Paladium demand. Also most activity in the mining operations of Nickel as well as the majority of Paladium mining take place in the northernmost area of the Krasnoyarsk Krai.

With most of the oil and gas production situated in the northern part of the Tyumen Oblast – the Khantia-Mansia and Yamalia Autonomous Okrugs – it becomes clear that resource exploitation has major regional influences as well. Therefore, the regions of the Russian Federation need to be analyzed in more detail in regards to their natural resource endowments.¹²

The preconception that the foremost sector in the Russian Federation is the oil and gas exploitation industry, can be shown to be valid insofar as those industries play a major role in the creation of Russian income and also a major role as export goods. Figure 2.5 illustrates the relation that the oil and gas exploiting sector has to total GDP on the one hand and the relationship the oil and gas exploiting sector has to total exports on the other hand (Fig. 2.6).¹³

¹²Note that in the following study the term 'resource endowment' is not understood to include the usage or exploitation of forests or the water supply, but only applies to precious and non-precious metals and stones as well as crude oil and natural gas.

¹³Both figures are based on official data from Rosstat.



Fig. 2.5 The oil and gas sector in relation to GDP (t/Bio. RUB) as of 2010



Fig. 2.6 The oil and gas sector in relation to total exports (t/100 Mio. RUB) as of 2010

While the Russian oil and gas sector accounts for a large share of overall income generation in the Russian Federation, its production is relatively localized to only a number of major oil and gas fields. Most of the Russian oil and gas fields can be found in the Urals and in the western parts of Siberia, namely the northern and south-western parts of the Tyumen Oblast. On the other hand a large exploitation site of oil is located on and offshore of the island of Sakhalin in the far east, in



Fig. 2.7 Oil and gas exploitation and reserves in the Russian Federation as of 2012

the Ochotsk Sea. Finally, the third large oil and gas exploitation site is located in the middle eastern parts of Siberia and encompasses the area of the Republic of Sakha and the Irkutsk Oblast. Figure 2.7 points out the main locations of oil and gas exploitation sites.¹⁴

Aside from current exploitation sites, Fig. 2.7 also reports on the location of major and potential oil and gas fields and therefore provides a regional view of the actual production of oil and gas as well as a description of potential future resources, yet untapped.

As an extension of Figs. 2.7, 2.8¹⁵ and 2.9¹⁶ give an overview of the main excavation sites for select non-precious and precious metals. Most of the Russian natural resources such as metals and minerals are situated in the Ural range. Additionally, a larger share of the excavations are located in the Krasnoyarsk Krai or the Republic of Sakha, usually in areas near the polar circle.

Comparing both figures with the figure on climate zones from the preceding section, it can be seen that a large amount of oil and gas exploitation as well as mining for metals and minerals takes place in regions that are considered inhospitable terrain. Therefore, the exploitation of natural resources will need to offer additional incentives to the laborers performing the exploitation in these regions.

¹⁴The figure is based on International Energy Agency (2007), Universalatlas (2009), RIA Novosti (2011) and Without Author (2012b).

¹⁵The figure is based on information taken from Universalatlas (2009) and Without Author (2012a).

¹⁶The figure is based on information taken from Universalatlas (2009).



Fig. 2.8 Major non-ferrous metal excavation sites in the Russian Federation as of 2012

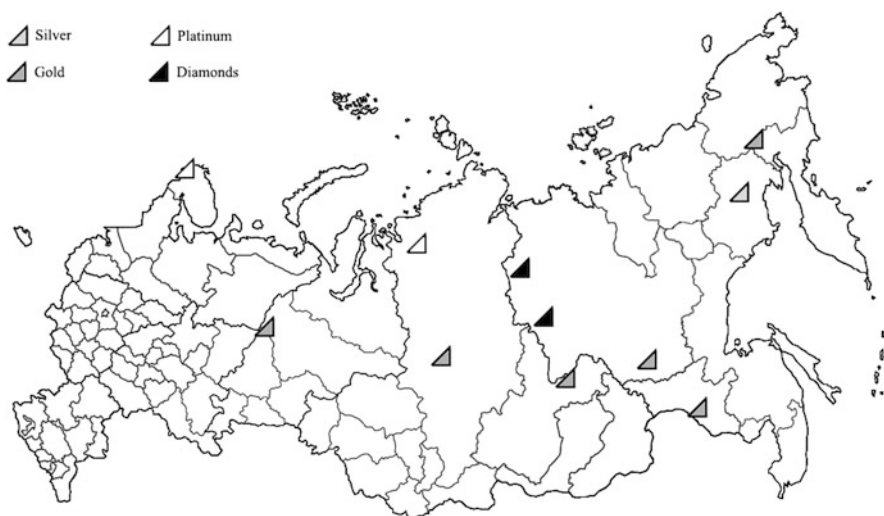


Fig. 2.9 Major precious metal excavation sites in the Russian Federation as of 2009

As mentioned by [Heleniak \(1997\)](#), due to the forced settlement policies implemented under Soviet rule since the beginning of the transition period or the late years of the USSR, a significant amount of labor migration out of those inhospitable regions took place. This resulted in even more restricted access to qualified labor in these regions. These developments reflect in per capita values on income as well as in the metropolitan structure as will be seen in Sect. 2.5.

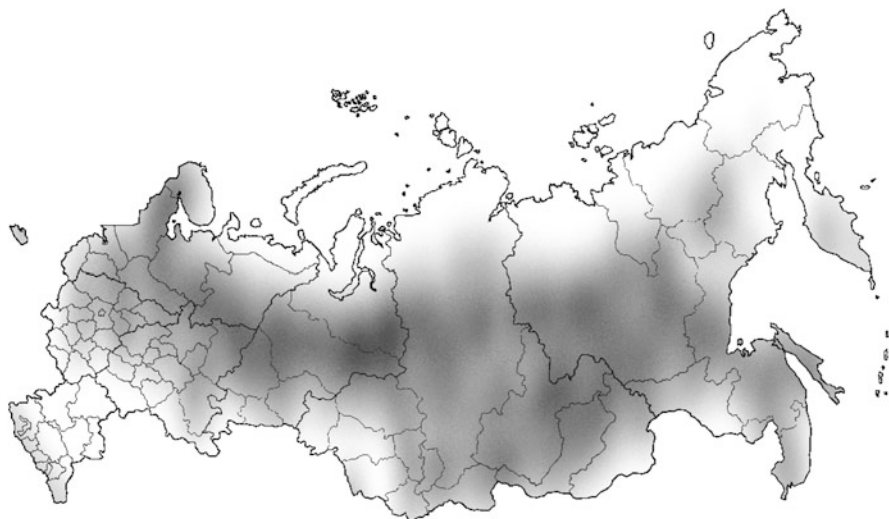


Fig. 2.10 Forested areas in the Russian Federation as of 2002

Finally, the supply of clean water reserves and the area occupied by forests, though full of natural resources, is excluded from this study. However, to give an impression of the amount of resources the Russian Federation has in this field, Fig. 2.10 gives a rough overview of the distribution of forests across the regions of the Russian Federation.¹⁷

The figure illustrates that in the eastern most regions the amount of forested area is much higher than in the western regions, which by itself is only a small novelty, as those regions are generally larger and more sparsely populated and therefore a large part of these regions is still unaltered by human population. From a resource perspective this strengthens the position of eastern regions that, aside from providing revenue through the exploitation of natural resources, are also contributors to the environment and a better climate.

Due to the presence of lakes Baikal, Ladoga and Onega, respectively – the three largest single bodies of fresh water reserves in the country – the Irkutsk and the Leningrad Oblasts are the regions with the largest fresh water reserves.

2.3 Political Structure

Since 2008 the Russian Federation has been divided into 83 subjects which are combined into 8 federal districts. Of the 83 subjects, 46 have the status of an oblast, 21 that of a republic, 9 the status of a krai, 4 the status of an autonomous okrug, 1 the status of an autonomous oblast and 2 are federal cities.

¹⁷The figure is roughly based on the information contained in [Global Forest Watch \(2002\)](#).

In contrast to the other types of regions, republics have their own constitution and their own legislature. Therefore they can be considered to be – at least *de jure* – politically autonomous. The federal government takes on the role of common foreign policy mediator for the republics. Originally, the republics were meant to be home to a specific minority, therefore many regions still carry names that in part refer to said ethnic group. However, nowadays the namesake ethnos of many republics is no longer the majority ethnos. In accordance with their ethnic focus, republics have a number of additional rights, like the choice of their own official language – besides Russian that is.

Before reforms initiated by the Putin and Medvedev legislation the chief executives of the republics were referred to as presidents and were chosen by regional authorities or through regional elections. Today the title of president is reserved solely for the president of the Russian Federation. During the later Putin and the early Medvedev legislation local governors were nominated by the Russian president and local authorities only had the ability to approve them. Since 2012 local governors are again elected by the region's population.¹⁸ In this respect discrepancies between republics and other regional entities of the Russian Federation have been abolished or at least diminished, leading in most aspects to a higher dependency of local politics and politicians on federal authorities.

The Jewish Autonomous Oblast is the only oblast of an autonomous nature. Like the republics, autonomous oblasts and okrugs were established to house ethnic minorities that were usually also name-givers for the region. Then again, in the Jewish Autonomous Oblast the Jewish people today are only a minority and have been so since Soviet times.

In the last years of the Soviet Union and in the first years after its dissolution there were altogether ten autonomous okrugs. As of 2008 the status of the okrugs changed and most of the original okrugs became parts of surrounding oblasts or krais. Of the four remaining autonomous okrugs two are part of the Tyumen Oblast (the Khanty-Mansi Autonomous Okrug and the Yamalo-Nenets Autonomous Okrug) and one is part of the Arkhangelsk Oblast (the Nenets Autonomous Okrug). Only the Chukotka Autonomous Okrug became independent of the Magadan Oblast with which it previously had been associated.

Considering their executives and legislation autonomous oblasts and okrugs function in mostly the same way regular oblasts do.

Different in structure are the two federal cities of Moscow and St. Petersburg. They are special, as they are but single cities with a different status. Aside from this special status, both cities differ from each other, as Moscow does not have an official governor but is governed by its mayor. St. Petersburg on the other hand is governed by a governor that is nominated by the president and approved by the city council.¹⁹

¹⁸Note that the federal president retains the right to negate the election results.

¹⁹After changes in 2012, both the mayor of Moscow and the governor of St. Petersburg are elected again.



Fig. 2.11 Relationship between business and politics

Although St. Petersburg is situated inside or on the border of the Leningrad Oblast and the oblast administration is situated in the city, the governor of St. Petersburg is not responsible for the administration of the oblast. The same holds true for the relationship between the Moscow Oblast and the city of Moscow.

Geographically, St. Petersburg and Moscow differ insofar as the city of St. Petersburg is geographically coherent – with the exception of the city of Kronstadt – while the city of Moscow extends as well to a number of small areas in the Moscow oblast, especially the town of Zelenograd.²⁰

As mentioned above, the executive chief of the regions was until recently nominated by the president and is now elected by the population, although in some cases large enterprises in the respective regions have exerted a measure of influence by promoting candidates that are beneficial to their causes. By centralizing the local governments the Putin and the Medvedev legislations reduced this promotion, but the influence of big business on regional policy still remains.

The study by [Ortung \(2004\)](#) differentiates between six different types of regions according to the presence and power of businesses and respective opportunities to influence the regional government.²¹ Figure 2.11 reproduces the classification of [Ortung \(2004\)](#).

²⁰Note, that the borders of the city of St. Petersburg have remained unchanged since the end of the Soviet Union, while the city of Moscow was enlarged in 2012 by 1,500 km², thereby increasing its size by more than 230 %. After the enlargement the city of Moscow now borders the Kaluga Oblast, in addition to the Moscow Oblast.

²¹Note that the regional government does not allude to the governor alone but to members of the regional Dumas as well as other political authorities.

In detail the six groups of [Ortung \(2004\)](#) are described as follows:

Corporate Regions: Even in evolved market economies, cities exist where one firm is the single most important economic presence in the city and therefore can be called the dominant firm. Examples from Western Europe, especially Germany, include SAP in Walldorf or Volkswagen in Wolfsburg. In the Russian Federation examples include AvtoVaz in Toljatti or Norilsk Nickel in Norilsk. A corporate region is the regional counterpart of cities that are also referred to as corporate or company towns. Note that being a corporate region does not preclude other big firms in the regions, only that one of them clearly dominates the rest. In these corporate regions it is mostly the dominant company that is involved in the regional administration or is relatively tightly connected to it.

Pluralist Regions: In a pluralist region no one company plays a dominant role. The usual case is a limited number of big companies and a mostly oligopolistic business structure. Due to the pluralist nature of the business structure, the part single firms play in influencing regional politics directly or indirectly is more limited and a stronger competition for political influence exists than in corporate regions.²²

In Play: Regions that are considered to be *in play* are at the moment of analysis considered to be pluralist but with dynamics taking place that might lead one business to rise above the others and become the dominant business.

State-Controlled Regions: Especially in the Russian Federation, a number of cities exist whose economy is almost totally under state control as all major companies are state-owned. A good example of this kind of city can be found in previously closed cities that mainly served the state defense industry. Again a state-controlled region is the extension of a state-owned city to the regional level. In these regions the political situation is mostly inverse to the corporate regions where the companies try to influence regional politics. In the extreme, it is local authorities that are pitted against federal administration and local businesses.

Foreign-Influenced Regions: In all of the above mentioned cases it is mostly Russian owned businesses of public or private nature, that dominate the business structure. In foreign-influenced regions the domestic businesses are dominated by one or a number of foreign-owned businesses. Due to the nature of foreign-owned enterprises the possibility of their directly influencing local administration by introducing company men into the regional administration are rather limited. Therefore, only indirect means of influencing the regional administration remain, which in turn means that regional authorities are politically more strongly oriented to the federal center than to any single enterprise.

²²Note that in both cases, the corporate as well as the pluralist regions, it is predominantly Russian businesses that are situated in the regions.



Fig. 2.12 The regions of the Red Belt

Neglected Regions: Neglected regions, as their name implies, are neglected by most important businesses. However, it is possible that companies settle in these regions but do not play a significant role in the economic structure of the region or take no particular interest in political activities.

Finally, the last aspect in the context of this section is the region's allegiance to the ideas of a market economy and the level of acceptance of the federal political administration.

According to the arguments presented in [Berkowitz and DeJong \(1999\)](#), the results of the 1996 presidential election can be taken as an indicator for reform potential, at least in the transition years of the Russian regions. The regions that voted for the Communist candidate Gennady Zyuganov in both rounds of the 1996 election are referred to as the *Red Belt* regions by [Berkowitz and DeJong \(1999\)](#) and others and considered to be more reform-opposing than the Non-Communist voting regions. The following [Fig. 2.12](#) illustrates the regions of the Red Belt. They are geographically situated along the southern border of the Russian Federation.

The idea behind the Red Belt figure is a common tool for geopolitical analysis.²³ It allows acceptance of the current political system to be measured by considering those regions that voted for Vladimir Putin²⁴ in the 2012 presidential election.

²³See for example [Popov \(2001\)](#) and can be applied to the 2004 presidential election in Russia [Marsh et al. \(2004\)](#).

²⁴Note that instead of the officially published results, a filter needs to be applied first to filter out the effects of extensive election fraud performed.

2.4 Ethnographical Religious Structure

The Russian Federation, with an area of more than 17 million km², is home to not only ethnic Russians, but to a diversity of other ethnic groups. Some of these groups hold an elevated status insofar as regions of the Federation – autonomous oblasts and okrugs as well as the republics – are officially attributed to an ethnic group. Examples include the Jewish Autonomous Okrug and the Chukothian Autonomous Okrug, neither of which are part of another region, and the Khanty-Mansi or the Yamalo-Nenets autonomous regions that make up a large portion of the Tyumen Oblast.²⁵

As different ethnic groups have different cultural beliefs and backgrounds,²⁶ it is necessary to get a comprehensive understanding of their diversity and of the distribution of different ethnic groups within the Russian Federation. In many ethnic groups the culture extends to the religious belief system and therefore for many ethnic people belonging to their ethnos automatically suggests belonging to a certain religious group. Following this line of thought, it can be seen that it is not possible to discuss one aspect without the other and that both aspects influence each other directly or indirectly. Therefore, in the following two sections both aspects will be discussed, while the second section on religion is based in part on the ethnic structure of the Russian Federation.

2.4.1 Ethnographical Structure

It is estimated that over 170 different ethnicities are living on the territories of the Russian Federation.²⁷ Table 2.2 gives an overview over the major groups and their share in the total population of the Russian Federation according to the 2010 Census.

The table illustrates that though the majority of the population is Russians, almost 20 % of inhabitants are ethnicities of a different origin.

The distribution of different ethnic groups across the regions of the Russian Federation is of twofold importance in the context of this study. Due to the fact that religious affiliation might be connected to the ethnos, a study of the distribution of different ethnic groups also offers an opportunity to account for the spread of religious beliefs. Additionally, due to resettlement policies during Soviet times, a number of ethnic groups were collectively moved to specific regions, which later

²⁵Note that since the end of the Soviet Union a number of formerly autonomous regions – also attributed to an ethnic group – within the Russian Federation have been integrated into a larger regional body. This especially concerns parts of the Republic of Komi, the Krasnoyarsk and the Kamchatka Krai as well as the Arkhangelsk, the Irkutsk and the Zabaykalsk Oblasts. Note, that Chukotka has formerly been part of the Magadan Oblast.

²⁶In this study mostly their views on economic behavior and knowledge sharing is of interest.

²⁷See Gil-Robles (2005). Note that the 2010 All-Russian Population Census (Rosstat 2010) lists 194 ethnic groups, some with only single digit member numbers.

Table 2.2 Major ethnic groups in the Russian Federation

Ethnic groups	Population	Percentage of total population
Russians	111,016,896	80.90
Tatars	5,310,649	3.87
Ukrainians	1,927,988	1.40
Bashkirs	1,584,554	1.15
Chuvash	1,425,872	1.05
Chechens	1,431,360	1.04
Armenians	1,182,388	0.86
Avars	912,090	0.66
Mordvins	744,237	0.54
Kazakhs	647,732	0.47
Azeris	603,070	0.44
Dargin	589,386	0.43
Udmurts	552,299	0.40
Mari	547,605	0.40
Ossetians	528,515	0.39
Belarussians	521,443	0.38
Kabardians	516,826	0.38
Kumyks	503,060	0.37
Yakuts	478,085	0.35
Lezghins	473,772	0.35

on were named after them.²⁸ To illustrate the regional differences concerning the influence of ethnic groups other than Russians, the Fig. 2.13 reports the proportions of other ethnic groups in comparison to ethnic Russians.²⁹

The figure illustrates clearly that, though some of the regions of the Russian Federation are named after some ethnic group supposedly living there – especially the republics and the autonomous regions – in more recent times non-Russian ethnic groups no longer necessarily represent the majority anymore. In some cases the name-giving ethnos might not even be the strongest minority group anymore, like in the Jewish Autonomous Oblast.

The importance of the spread of ethnic groups can be seen in the fact that ethnic groups have their own specific culture and therefore their specific views on economic growth and knowledge and knowledge sharing per se. Additionally, studies like [Alesino and La Ferrara \(2005\)](#) show a relationship between ethnic diversity and economic performance.³⁰

²⁸For analysis of the resettlements refer to [Pohl \(1999\)](#).

²⁹The figure is based on data taken from [Rosstat \(2010\)](#).

³⁰Note that a number of studies on the relationship between ethnic diversity and economic growth exist, however quantitative studies on the economic performance of different ethnic groups, especially in the Russian Federation, are not available.



Fig. 2.13 Presence of ethnic groups in the Russian Federation

Also, in the study by [Hofstede \(1980\)](#) that differentiates societies into individualistic and collectivistic societies, it can be seen that the cultural, societal attitude also influences knowledge sharing and therefore spillovers.

Specifically, the Russian Federation studies conducted during the transition years like [Hisrich and Grachev \(1993\)](#) or [Puffer and Shekshnia \(1996\)](#), in addition to newer ones like [Vadi and Vereshagin \(2006\)](#) and [Michailova and Hutchings \(2006\)](#) report that the Russian work culture is more collectivistic than individualistic. [Michailova and Hutchings \(2006\)](#) even argues that due to an established vertical collectivism knowledge sharing in firms is enhanced.

In contrast, studies that attribute individualistic characteristics to the Russian work culture, like [Ralston et al. \(2008\)](#) and indirectly [Golovanova \(2010\)](#), and in a context of four former Soviet countries [Ardichvili and Gasparishvili \(2001\)](#), exist as well.

This perceived discrepancy can be resolved in part by the studies of [Naumov and Puffer \(2000, 2001\)](#), who find that for the transition years – the 1990s – individualism is more pronounced in younger generations while older generations raised under Soviet rule still rate higher in collectivistic characteristics. They also argue that the level of education is important for the perspective taken. Therefore, the possibility exists that newer studies refer more to younger workers and have a selection bias towards more individualistic attitudes.

In summary, it can be said that while a more or less collectivistic work ethic still persists in the Russian Federation, with the growth of a younger generation individualistic attitudes have also become more widespread in the society. In the context of this study this would mean that the transition years might have offered a

better environment for knowledge spillovers than the years afterwards, since in the earlier years a higher amount of collectivistic work ethics prevailed.

2.4.2 Religious Structure

In the seminal paper [Helble \(2007\)](#) has shown on a national level and using a rather crude dissemination of the different world faiths that sharing the same faith leads to a higher likeliness of trade interactions.

Following the results of [Helble \(2007\)](#) and basic views world religions have on economic activity, it can be concluded that some religions view economic development and their own involvement in it more positively than others.³¹ In their overviews on consistent influence factors on economic growth, both [Sala-I-Martin \(1997\)](#) and [Blume and Fromm \(2000\)](#) report a negative impact by the proportion of Catholic believers in the population on economic growth.

Additionally, [De Long \(1988\)](#) argues that religion is a good proxy for a society's capability to absorb new technologies, implying indirectly that religions have different views on the use of technology and, therefore, the use of innovations. The study also provides a basis to link religion to the absorptive capacity which will be introduced in Sect. 3.6.

Building on these insights, it is prudent to assume that a relationship between the presence of specific faiths in a country and economic development might exist. However, this influence would mostly only work in the long-term through cultural behavior changes.

Table 2.3 above gives an estimate of the distribution of different faiths in the Russian Federation as a whole. Nevertheless, the downside of these numbers is that they are based on a survey and are therefore only available for 2012 – the year of the survey.³² As per a legislative act statistical data on beliefs is not collected by Rosstat on a broader scale and was not part of the 2010 Census.

Aside from the problem of data availability, the official adherence to a faith does not necessarily represent the number of actual practitioners – those that fully embrace their faith. In Russia, due to the existence of regions designated to specific ethnic groups and a generally low labor mobility, only a limited number of religious diffusion took place. The result of this lack of diffusion is the unequal distribution of faiths across regions on the one hand and the even more important uneven distribution of the truly faithful versus the official faithful.³³ In general, because

³¹In some Evangelical Christian faiths, for example, achieving economic well-being is viewed as seen in part as fulfilling the will of God. The study by [Weber \(2010\)](#) strengthens this argument. Within Jewish beliefs, achieving economic wealth can also be seen – though more by historic happenstance than by doctrine – to go hand in hand with the belief system.

³²See [SREDA \(2012\)](#).

³³Note that in some ethnic groups the discrepancy is considered very small, as with the Muslim religion in the North Caucasus.

Table 2.3 Religious beliefs in the Russian Federation

Religious group	Percentage share
Russian Orthodox	41.14
Believer without Religion	25.16
Atheist	13.02
Muslim Unaffiliated	4.66
Other Christians	4.06
Muslim Sunnis	1.66
Other Orthodox	1.50
Pagan and Tengrist	1.22
Buddhist	0.46
Orthodox Old Believer	0.32
Protestant	0.21
Muslim Shia	0.21
Christian Catholic	0.13
Jewish	0.07
Hindu	0.06
Pentecostal	0.06
Other Beliefs	0.61

of the ban on religion under Soviet rule, a large number of Russian Orthodox are also less involved in their official beliefs.

Figure 2.14 gives an overview of the two most prevalent religious beliefs in a region.³⁴ The background color of a region marks the most prevalent religion while stripes mark the second most important religion.

While the western part of the Federation is clearly dominated by the Russian Orthodox Church, the southern parts show a large share of Muslim dominated regions.

Preliminary tests³⁵ on the relation between the distribution of religious affiliations and economic growth as well as knowledge outputs and spillovers remain rather inconclusive. Only very limited and general evidence could be found that a high percentage of Orthodox and other Christian believers is more beneficial for economic growth, as well as for the generation of new knowledge, than a high percentage of Muslim or Pagan believers. However, both cases can be believed to be merely a statistical artifact since Muslim and Pagan faiths are more prevalent in peripheral non-developed regions in contrast to Orthodox and Christian beliefs.

³⁴Note that atheism – however prevalent it might be – is not considered a religious belief. The same applies to people who report to believe in a godly power, but do not adhere to any official faith.

³⁵Results are not part of the study as the data available could not be included into the broader research framework.



Fig. 2.14 Religious beliefs in the Russian Federation

If, however, multi-collinearity aspects are taken into account and the proportion of adherents to the Russian Orthodox church are excluded from the estimation, an especially positive impact of the proportion of Protestants and Jews on economic growth – as stated above – can be shown to exist.

2.5 Metropolitan Structure

Disaggregating the regions of the Russian Federation even further than the rayon level³⁶ raises questions as to the amount, size and location of its cities and the role specific cities and towns play in the economic development of the Federation.

Considering the number of cities in the Russian Federation, it is essential to differentiate between the different types of cities and more precise types of urban settlements. The Russian Federation roughly follows an even distribution concerning the size and number of cities in a country – with Moscow being the major exemption. There are five different types of cities present.

The first type are the federal cities of Moscow and St. Petersburg. While sometimes they are not considered to be different from other cities, their status as separate regions, denoted by the status of federal city, sets them apart not only by definition, but also by their legal position inside the Russian metropolitan system.

³⁶A rayon is an administrative unit below the regional level comparable to American *counties* or German *Landkreise*. However, large cities might be subdivided into different rayons themselves.

Table 2.4 Megalopolises of the Russian Federation

City	Federal district	Population	Share of region	Share of RF
Moscow	Central	11,514,330	100.00	8.06
St. Petersburg	Northwestern	4,848,742	100.00	3.39
Novosibirsk	Siberian	1,473,737	55.28	1.03
Yekaterinburg	Urals	1,350,136	31.41	0.95
Nizhny Novgorod	Volga	1,250,615	37.78	0.88
Samara	Volga	1,164,896	36.22	0.82
Omsk	Siberian	1,153,971	58.37	0.81
Kazan	Volga	1,143,546	30.20	0.80
Chelyabinsk	Urals	1,130,273	32.49	0.79
Rostov-on-Don	Southern	1,089,851	25.47	0.76
Ufa	Volga	1,062,300	26.09	0.74
Volgograd	Southern	1,021,244	39.11	0.71

Additionally, their size distorts the even distribution of cities of specific sizes of the Russian Federation, although for St. Petersburg the deviation is not as pronounced as for Moscow. The study by [Kauffmann \(2010\)](#) illustrates this peculiarity.

The reason for the higher population in St. Petersburg and especially in Moscow dates back to the special role Moscow played during the Soviet Union, namely the Union's centralistic political structure. Similar trends can be found in other centralistic countries as well.

Aside from the two major cities, a number of cities exceed a population of one million inhabitants. In the context of this study these cities will be referred to as megalopolises.

To illustrate the national importance of the megalopolises Table 2.4 lists all cities of the Russian Federation whose populations exceed one million, based on the 2010 Census, and their share of total population of the surrounding regions as well as the Russian Federation as a whole. Additionally, each city's location by federal district is given.

It can be noted that all megalopolises are the capitals of their respective regions and in most cases the capital of a federal district as well. Only two federal districts do not have a megalopolis for a capital – the Far Eastern and the North Caucasian districts. However, in these districts no megalopolises are situated at all. The megalopolis farthest to the east is Novosibirsk and the one farthest to the south is Rostov, both in similarly named oblasts. A final note to this topic might be that from the 1980s to the early 2000s the city of Perm also reported more than one million inhabitants. High migration and low birth rates, however, resulted in roughly 991,500 inhabitants in 2010.

A third group of cities are the metropolises with populations ranging between 100,000 and 999,999. The Russian Federation has 154 cities that meet this criterion.

A fourth group is made up of cities or urban-type settlements. Here the Russian Federation accounts for 1,096 cities and urban-type settlements.



Fig. 2.15 Location of universities as of 2009

Finally, the last group is settlements or villages. The difference between urban-type centers and settlements lies not necessarily in their size but in their focus on other industries besides agriculture.

As can already be deduced in part from the location of the major cities and the size of the respective regions, the population density varies significantly across the different regions as does the average distance between two major cities. The population density for all of Russia is 8.37 inhabitants per km² and the average distance between two cities – those with at least 1,000,000 inhabitants – is 1,171.3 km.

In most developed countries, due to the importance of the service sector, output is generally generated in urban regions and the size of a city can be a sufficient indicator for its economic potential. In the Russian Federation though, economic output is based in large part on industry and natural resources. In both cases, but especially in the latter, a large city population does not necessarily promise higher returns. To determine whether this argument holds true, it would be necessary to disaggregate GRP output numbers to the city or urban area level. While in some rare cases output data is available on a city level – Moscow and St. Petersburg for example – it is not available on a broad scale.

Economic output is only one side of this study, the other being knowledge and its creation. This other side can indeed be easily observed on an urban level. Using the Anabin database³⁷ it is possible to generate a chart of the Russian Federation displaying all university cities and using their size on the map to describe the number of universities situated in each city. The results is given in Fig. 2.15.³⁸

The figure clearly illustrates that most universities are situated in the western or southern parts of the Russian Federation – excluding mainly the North Caucasian

³⁷See Kultusminister Konferenz (2010).

³⁸The figure is based on data collected from the Kultusminister Konferenz (2010) database.



Fig. 2.16 Patents granted by the European Patent Office as of 2006

regions. Additionally, it can be seen that the map with the university distribution represents the distribution of major cities and their sizes rather well. The main exceptions are the Moscow and Leningrad Oblasts which clearly are influenced by the nearness to Moscow and St. Petersburg, respectively.

A similar picture arises if knowledge output is measured as the number of patents granted by the European Patent Office (EPO) is illustrated. Figure 2.16 shows this relationship.³⁹

Considering the results for developed economies, that a high knowledge output is tied to high economic output and also the distribution of natural resources across Russian regions and nearby cities,⁴⁰ it is prudent to say that both of these indicators together generate a picture of how economic output is distributed across cities of the Russian Federation.

Nevertheless, in the course of this study no such composite indicator will be calculated. Instead it is assumed that urban population mirrors economic

³⁹The data on patents is taken from the Patstat patent database of the European Patent Office. Note that in the following study all figures that implement data on patents granted by the EPO refer to the Patstat database and no third party publication. As will be argued in Sect. 3.2.1.3, two possible counting procedures for patents exist. The figure is based on a shares count. If four inventors take part in a patent, every inventor and therefore the region where each inventor resides is attributed one quarter of a patent.

⁴⁰Assuming that firms responsible for the exploitation of natural resources are situated in nearby cities.

output – though not as precisely in resource rich regions with an overall small service sector. Respective economically weighted distance matrices will be calculated and implemented later on.⁴¹

2.6 Transport Infrastructure

In the previous section it was pointed out that the distance between cities in the Russian Federation – especially in the Eastern parts – is quite large. A functioning, well established infrastructure is therefore essential for connecting the different centers of economic activity across the Russian regions.

A functioning infrastructure is not only important for enabling the population to move between different regions of the Federation, but for goods produced or resources mined and quarried in one region to be transported to other regions. From an economic point of view a functioning transportation network is essential to assure price and income convergence across regions.

Basically, four main channels of transportation are used in this context.

Street	As of 2011 the Russian Federation reported a total of 728,072.67km of highways and an unreported number of unpaved streets. ⁴²
Railway	As of 2011 the Russian Federation reported a total of 851,461.90km of railways. ⁴³
Waterway	As of 2012 the Russian Federation reported a total of more than 102,000km of navigable rivers conducive to shipping and 125 ports. ⁴⁴
Air	As of 2012 the Russian Federation reported a total of 260 airports. ⁴⁵

Figure 2.17 shows the density of highways on a regional level in the Russian Federation.⁴⁶

As might have been suspected, the highest relative number of highways is reported in the regions surrounding Moscow and the North Caucasian regions. In the Central Russian regions there is on the one hand a high number of highways and the regions themselves are only of an average size, while in the Northern Caucasus most of the regions are comparably small.⁴⁷

⁴¹ A detailed description on how to calculate these distance matrices is given in a later section.

⁴² See Rosstat (2012).

⁴³ See Rosstat (2012).

⁴⁴ See Rosmorport (2012), Infoflot (2012) and Source (2012).

⁴⁵ See Airport Association/Assotsiatsiya Aeroport (2012) and Ministry of Transportation of the Russian Federation/Ministerostvo Transporta Rossijskoj Federatsii (2012).

⁴⁶ Note that, due to the reported data by Rosstat, the federal cities of Moscow and St. Petersburg are considered to be part of their surrounding oblasts.

⁴⁷ Note that Greunz (2002) reports an alternative indicator for the physical infrastructure that takes into account not only the infrastructure and the geographical size of the region itself, but the population as well, allowing the smoothening out of pure size effect.



Fig. 2.17 Highways in km per 1,000 km²

The strange outlier of the Altai Krai seems to be a statistical misreporting on behalf of Rosstat, as a ratio of 208 km highways per 1,000 km² would mean that in absolute terms the Altai Krai would have the largest highway network of all of the Russian regions – more developed even than the Moscow Oblast. Referring to past data for 2010 and a relative value of 91 km per 1,000 km² would mean that the krai has more than doubled its highway infrastructure in only 1 year. Considering its geographical layout, this is highly doubtful. Therefore, it can be assumed that the true statistic is more likely to be around 91 km per 1,000 km², still indicating that the Altai Krai would be in the third instead of the fifth category.

The figure on the railway infrastructure is more or less similar to that of the highways. The railway system is most developed in western Russia, as only western Russian or comparably small regions in the east report relative values of one of the two largest categories, as can be seen in Fig. 2.18.

Aside from the relative amount of railway infrastructure, Fig. 2.18 also reports major railway lines such as the Trans-Siberian-Railway with its two sub-branches starting in Irkutsk and major additional branches like the Trans-Manchurian branch leading directly to China and the Trans-Mongolian branch leading to China by way of Mongolia. The main Kazakhstan branch is included as well. Additionally, the main line to Western Europe via Smolensk is included in the figure as well as the two high speed Sapsan lines connecting Moscow and St. Petersburg, as well as Moscow and Nizhny Novgorod.

Considering transportation via ship, the main harbors and ports by oceans or seas of the Russian Federation are:

Arctic Ocean Archangelsk, Dikson (Krasnoyarsk Krai), Kandalaksha (Murmansk Oblast), Murmansk, Naryan-Mar (Arkhangelsk Oblast), Severomorsk (Murmansk Oblast)

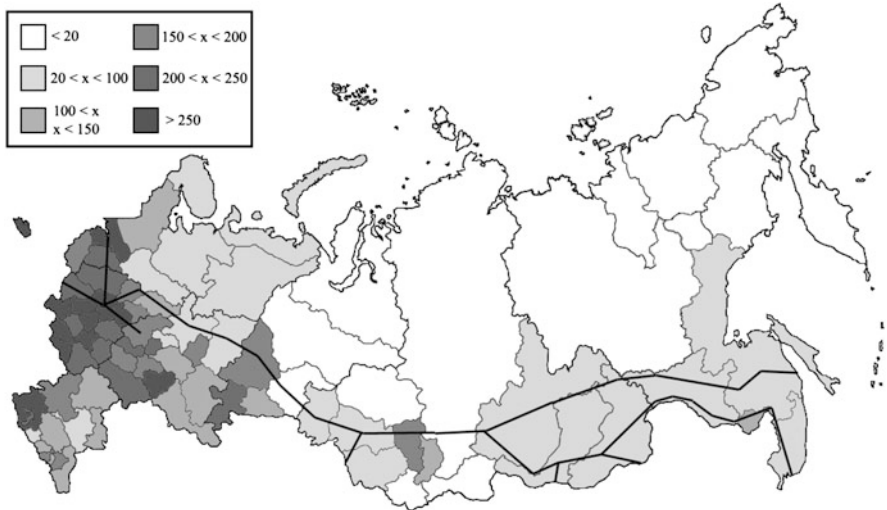


Fig. 2.18 Railways in km per 1,000 km² and major railway lines

Baltic Sea	Chupa (Republic of Karelia), Kaliningrad, St. Petersburg, Vyborg (Leningrad Oblast)
Black Sea	Azov(Rostov Oblast), Novorossiysk (Krasnodar Krai), Taganrog (Rostov Oblast)
Caspian Sea	Astrakhan, Makhachkala (Republic of Dagestan)
Pacific Ocean	Anadyr (Chukotka Autonomous Oblast), Korf (Kamchatka Krai), Korsakov (Sakhalinsk Oblast), Magadan, Vanino (Khabarovsk Krai), Vladivostok, Vostochniy (Primorsky Krai), Zarubino (Primorsky Krai)

In addition to these harbors and ports, inland water transport also plays an important role. Here the six longest rivers that can be used for water transports can be identified:

Amur	4,472 km
Don	1,950 km
Lena	2,824 km
Ob	2,962 km
Volga	3,692 km
Yenisei	5,539 km

Finally, the last aspect of the transport infrastructure is transport via air. Here a suitable indicator of the infrastructure is the number and type of airports.

As of 2012 the Russian Federation reported 260 airports. Of these 260 airports, 128 are officially attributed to use as transportation hubs for civil and cargo transport, 21 are military airports and the remaining 141 airports could not be categorized as either purely civil or purely military installations.

Of the 128 civilian airports 124 are listed by the International Civil Aviation Organization (ICAO) and 106 are listed by the International Air Transport Association (IATA), showing that the Russian Federation has more than 100 internationally registered air transport hubs. The assignment of airports to the federal districts as given in the list below shows that the airports are distributed across many of the Russian regions, whereas many of the smaller Western Russian regions do not report any civilian airports.⁴⁸

Central District	13 airports
Northwestern District	22 airports
Southern District	14 airports
Ural District	32 airports
Siberian District	29 airports
Far Eastern District	18 airports

It is interesting to mention that of the 13 airports of the Central district 8 are attributed to Moscow or the Moscow Oblast alone.

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⁴⁸Note that the North Caucasian District is not mentioned separately, but is implicitly part of the Southern district as detailed information has not been provided by the above cited sources.

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