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WORKING PAPER

**Assessment of Data Sources and Methodology Development
for Measuring Foreign Labour Requirements in the Russian
Federation**

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1. Introduction

There is no rule of thumb that tells how many labour immigrants are needed for covering shortages in a specific country during a given year. The quantity and quality of data, the resource and the time available, the short-term or long-term purpose and the specific interests of those involved define the broad or narrow definition of labour market needs. In brief, it is not a question of choices between good and bad, but choices among alternatives, all of which are legitimate.

The complexity and the purpose of specific country's needs of labour immigration generally warrant tailor-made designs that cannot be defined a priori. Yet, indications of what constitutes useful methodological approaches and methods are possible and useful.

An effective management of labour migration should take into account structural factors in determining labour requirements from both a short term and a long term perspective. Over the short term, many are the factors to be taken into account, namely: economic growth, sectoral composition, and the evolution of labour demand (hiring and firing), as well as main features of labour supply, and internal mobility. From a longer term perspective, other elements enter into play, such as demographic patterns and skills levels of younger cohorts, as well as the dynamics of technological change. Additional factors to be considered are the general attitude towards migrants to prevent social tensions at local level (e.g. availability of public services and housing facilities); as well as political factors from a more general point of view (i.e. international relations, internal security). Bearing this in mind, the next paragraphs summarise the current labour migration system in the Russian Federation (RF), and highlight main points preventing a more effective management of labour migration.

As from 2007, the Russian Federation (RF) relies on an annual quota to manage the recruitment of foreign labour from both visa regime (non-CIS) and visa-free regime (CIS) countries. The underlying principle is that of allowing the entry of foreign workers only for those job positions for which natives are not available. The quota is determined based on one single major source of information about labour market needs: employers' applications for hiring foreign workers. These applications are assessed at the regional and federal levels, in order to ensure that no domestic candidates would be eligible for such vacancies.

Specifically, authorisation to recruit from abroad is awarded to employers only if, upon registration of their vacancy in the RF Employment Services, no suitable domestic candidate can be found. Additionally, the system provides preference to foreign workers from CIS countries (except from Georgia and Turkmenistan), since they have visa free access to the RF and do not require a letter of invitation from an employer to obtain a work permit. Since 2007, the only condition for them to obtain a work permit is that of entering into the quota ceiling. Hence, they can apply for a work permit upon arrival to the RF and find a job meanwhile. On the other side, non-CIS workers are required a letter of invitation from the employer, and they have also to fall into the quota total.

However, there is no a specific and harmonised methodology for such labour market needs assessment. Medium-term forecasts, administrative records on vacancies and registered unemployment, labour market surveys, and employer/business-based surveys, are not systematically used to cross-check the employers' requirements. Ultimately, this prevents the foreign workforce from filling those vacancies which actually are hard-to-fill by native workforce and may also result in persisting skill mismatches and inefficient functioning in the labour market as a whole.

The introduction of a quota linked to labour market needs responds to increasing awareness of the migration phenomenon and its role in filling labour positions for which there are no domestic candidates. However, the current system is not able to provide for foreign labour force there were needed in a timely manner. In fact, administrative constraints are significant, especially for small-sized firms or private households, which may be those facing greater needs for foreign workers. Also, the quota definition process is lengthy and not timely enough to respond to labour market dynamics, especially to seasonal or short-term changes in local labour markets.

Specifically, employers are required to place their application for foreign workers about a year earlier than the actual recruitment date. As such, it demands for a great programming capacity on the side of the business sector which may not be always possible. Besides, if the work relationship with a current migrant worker comes to an end during the year, the employer may be obliged to wait until the following year to fill that vacancy (unless a native worker may be willing to undertake the job position).

Currently, RF Immigration policy underestimates the importance of monitoring the skill composition of migration inflows. The quota system faces difficulties caused by, on the one hand, the difficulty in forecasting from year to year the precise needs of the labour market and, on the other hand, the political dimension of annually posting quota levels. Existing evidence for RF pointed to a complementary role of immigrants in the Russian labour market, since they would be undertaking low paid, low skilled work positions (or highly specialised jobs). At domestic labour market level, there is also a mismatch between young workers' skills profiles and labour demand needs. In this regard, many of the labour shortages that have been built up over the last years can be expected to remain in some sectors despite the dramatic economic downturn since last year.

The impact of current economic crisis can not be underestimated: as the Russian economy slows down, the disappearance of jobs is likely to exert a downward pull on wages and working conditions, as well as in immigration pull factors. Thus, Russia will reduce the number of immigrants it accepts next year after the global financial crisis weakened the country's jobs market. At the same time, push factors inducing migration to Russia from neighbour countries are expected to increase, not decrease, the number of people who want desperately to get to Russia to find work, and with it their motivation to accept any old job under any old working conditions. This is particularly true when there are no jobs (and no government social supports) waiting for them. And inherent tension between short-term pull and push factors is expected to increase. Despite this tension, Russia needs to set realistic goals for legal labour immigration,

based on an understanding of the real trends in labour migration, with a longer-term perspective, that is referred to a period of restored growth.

Actually, international experience demonstrates that mismatch between labour demand and skills profile in domestic workforce cannot be corrected fully by importing foreign labour force. It is important to coordinate between employment policies and education policies in order to ensure that future labour force responds in a more coherent way to the skills needs of the labour market. (Boswell et al., 2004)

Therefore, more accurate estimates of the economy's need for migrant workers are required for the RF to set more realistic quota ceilings. This will also contribute to reduce the number of migrant workers that turn to irregular employment as a result of unrealistic quota levels, which mainly do not take due account of renewal of existing work permits.

Work permits last for no longer than 12 months (while the minimum is set at 3 months), and renewal hinges upon the ceiling of the following years' quota. Employers are also requested to indicate how many foreign workers will continue working for them a year after. It is a relevant source of information about potential renewals of work permits in the next year, which need to be accounted in the estimation of the quota ceiling. However, when considering such data, it is noted that it conveys some imprecision since it may prove hard to predict future workforce, especially for sectors with sizeable job turnover and for SMEs.

Hence, RF treats migration as a temporary phenomenon, albeit migration pressures will certainly continue, many migrants will wish to settle down in the host country and demographic ageing will advance further. There is much need to actively address this longer-term perspective of migration management in the years to come. From a measurement point of view, as migrant population has expanded significantly in the last years, it is important to adequately adjust the methodologies in existing surveys by including in the sampling framework the migrant component of the population of residence¹.

A further limitation of the present Russian migration framework, linked to the lack of longer-term perspective, is that a clear skill-oriented aim is missing. Despite employers are requested to indicate qualifications and experience in the applications for foreign recruitment, there is no clear matching between actual skills of migrants gaining access and most requested occupations from the employer side. Main reasons might be that migrants are willing to accept any job opportunity in order to enter and lack of capacity by the migration services in ensuring an adequate matching between the candidates' skills profiles and employers' requirements.

In order to develop a skills-based policy, it is necessary that the immigration legislation establishes an operational definition of skills which applies to the domestic context. It is no easy task, in view of recognised difficulties at international level in skills

¹ According to the World Population Data Sheet (WPDS), Russia has the second lowest rate of natural increase worldwide, at -0.6 percent. The WPDS projected a population decline from 144 to 119 million in Russia in the period 2004-2050. Russian population is also ageing as the ratio of dependents to working age population is steadily growing.

measurement (MAC, 2008). Despite this, at international level, points-based systems, such as the UK one, that select those migrants according to skills levels are those that appear more tailored to address labour market tensions. In the case of Australia, Miller (1999) demonstrates that immigrants selected on labour criteria are relatively more successful in the labour market than other categories.

The importance of skills' needs and migrants' skills profiles is taken into account in the present report, given existing legislation and limited data availability. For which, a focus is placed on observable factors, namely occupations, which allow for assessing skills levels. Besides, it is recommended that future efforts can gather information on skills through experience and educational qualifications, as well as wage levels (i.e. higher wages correspond to their opportunity cost which will reflect the productivity and relative scarcity of the skills they possess).

Nevertheless, newly launched initiatives show the continued efforts by Russian authorities and others for improving the labour migration system. First, 'Migrakuota.gov.ru' is a website by the Ministry of Health and Social Development in order to facilitate the application by employers. It was launched last year and it is under pilot phase in 12 regions. Employer (individual or firm) can register and fill the form, which is then automatically forwarded to the institution in charge in the corresponding geographical unit (i.e. which is that where the prospective foreign worker will be working). The employer applying on-line is nonetheless requested to send the hard copy signed of the application. Then, the assessment of such application starts, only for those with the paper copy. Employers can recruit several workers and for different regions/occupations within the same application.

Second, 'Migration XXIth Foundation' is a newly created, independent public-private partnership which brings together the public sector with employers. It should foster cooperation between migration authorities and employers in the recruitment of foreign labour force, especially from CIS countries. It foresees a network of contact points at RF subregional level and in the CIS region. These points will be recruiting and training candidates in line with employers' requirements.

With all this in mind, the objective of the present report is two-fold. First, it aims to assess main data sources available in the RF (at federal and regional levels) which may potentially be eligible for measuring foreign labour needs in a complementary way to employers' applications. This section shall also define some policy recommendations to improve the measurement capability of these sources as regards to labour market needs. Second, on the basis of the previous critical review and with reference to international experiences in the field, indicators will be defined which allow for monitoring occupations hard to fill, which in turn will facilitate a more accurate management of migration inflows into the RF.

Therefore, the aim of this contribution is, on the one hand, restricted, as it does not cover all the issues at stake in the implementation of the Russian Federation immigration policy (i.e. administrative procedures are only mentioned marginally); but, on the other hand, it is certainly ambitious because it attempts to address a rather complex issue such as that of identifying foreign labour market needs within an existing legal and policy framework. In this sense, the approach is that of finding cost-

effective adjustments which, on the basis of existing data and instruments, allow for estimating the needs of foreign labour one year ahead.

The main body of reliable data has been drawn from relevant literature as well as fieldwork (26th-30th January 2009), consisting of visits and interviews to main government agencies (Ministry of Health and Social Development, National Statistics Institute - Rosstat, Employment Services - Rostrud, as well as regional/district branches of the Employment Services) and contacts and interviews with representatives of main stakeholders, such as employers associations and trade unions, and with migration experts from the academic world. The present methodology has also relied on reports prepared for ILO by Russian experts on current RF mechanisms, as well as reports by international experts on European experiences, for foreign labour needs assessment².

² See Kroschenko and Zibarev (2008); Tiuriukanova (2008); Pastore and Rijpma (2008); Biffi (2008); Sander Lindstrom (2008); and, Estruch and Zupi (2008)

2. Lessons learnt from international experiences

This section provides a general outline of main international experiences as regards to sources of information and main indicators used to assess labour needs. As it will be seen, the consistency and comprehensiveness of any assessment of labour needs implies combining different, but complementary, sources of data and indicators.

Four preliminary considerations are acknowledged here.

First, the collection of pertinent data is crucial to appropriate and timely policy-making. But, in the process of methodology development, it is essential to consider user needs and ultimate purposes. Policy objectives and relevant stakeholders need to be taken into account before concluding about the usefulness and robustness of chosen sets of indicators. While some methods are preferred by policy-makers for exploring long term and general scenarios, detailed and quantitative projections may be more suitable to support larger numbers of stakeholders making choices. As in other policy areas, data collection systems to assess labour migration needs face the challenge of having to serve and reconcile different, and at times conflicting, information needs at various levels of government. (Wilson, 2008; Wilson et al., 2004)

Second, there is no unanimously agreed definition, and hence no estimation methodology, for labour shortages³. Ultimately, the approach adopted much depends on how and where shortages are perceived (IOM, 2008). Many can be the determinants of a labour shortage. From an operative point of view, it is important to distinguish between absolute and relative labour shortages (Boswell et al. 2004). In many countries, shortages occur because of labour market mismatches in the labour market rather than because of an overall lack of workers to fill the jobs in question.

Within a short-term perspective, a disequilibrium state of excess demand for (skilled and/or unskilled) labour at the prevalent wage exceeds the supply from resident workers. Typical causes of such disequilibrium are: (i) low labour mobility; (ii) incomplete information; (iii) sudden shifts in technology or consumption; and, (iv) economic temporary fluctuations, market segmentation and frictions, lack of market adjustment mechanisms flexibilities.

In this case it is essential to identify excess demand in the specific segments of the labour market: skills, occupations, economic sectors, and geographic regions. Useful labour market indicators should bring up-to-date information at disaggregated level on changes in unemployment and vacancy rates, employment and wage growth, occupational mobility, details on incoming labour-force (people who have recently completed vocational courses and university degrees), as well as activity rates and informal employment estimates.

As a rule of thumb, for example, a higher probability of labour shortage is typically associated with a higher vacancy rate, which is defined as the ratio of the number of vacant jobs to the number of unemployed persons in a labour market. In practice,

³ See MAC, 2008 for a recent review on this specific issue.

serious problems arise with such crucial information in available statistics, due to the unreliability of existing data and the difficulty in collecting recent and sophisticated information. With reference to current unemployment rates, this problem is aggravated when informal economic activities are significantly high. That is why additional sources of information, mostly based on survey evidence on both demand and supply sides, are very useful.

From a long-term perspective, (rather than focusing on temporary immigrants with specific skills), demographic changes, together with structural changes in modes of production, are crucial concerns. In particular, the ageing population is a prevailing dynamic process, which will affect European countries over the next few decades, with impressive consequences on labour market needs, particularly from a quantitative point of view. Economic immigration policies may also address this need for permanent immigrants to fill less specific gaps of continuous labour shortages (Zimmermann et al., 2007, pp. 69-101)⁴.

Third, and in view of all that, international experiences generally show that formulating labour migration policies requires exploiting available knowledge base in the labour market provided by the national statistics combined with qualitative information from relevant stakeholders (state agencies, employers and trade unions). Most countries seek a balance of both what is desirable from theoretical or model-based points of view, and what is feasible given practical limitations. Conventionally, labour shortages are estimated on the basis of household surveys and employers' reports on labour requirements in specific sectors. For instance, Italy and Spain calculate a total annual quota, which is broken down by regions (and in Spain by provinces and occupations), on the basis of economic forecast, consultations with social partners, employer reports, as well as regional labour market indicators. Additionally, governments may invest in further evidence by collecting and analysing complementary relevant data and conducting or supporting research on migration, which nonetheless tends to be more precise in assessing the prevailing situation than in projecting changes in labour demand. (IOM, 2008)

Last but not least, it is worth recalling the need for government intervention in managing labour demand for foreign labour force, because "the level of labour immigration that is in the interest of individual employers is unlikely to coincide with that in the best interest of the economy as a whole" (Ruhs, 2006, p. 14). Labour migration policy-makers play a crucial role in assessing which of the different approaches should be adopted according to the nature of the labour shortage, as well as considering the macroeconomic and socio-demographic situation. In this regard, Ruhs (2006) identifies three points to be taken into account when assessing foreign labour needs: (1) recruitment costs by employers for hiring foreign workers, which depends on employers hiring and labour costs but also the overall employment conditions at which foreign workers are available; (2) in most countries, employers are always required to give preference to resident workers before hiring additional foreign workforce, which is then a residual share of overall labour demand; (3) recruiting additional labour force is only one of the many responses adopted by employers to a perceived labour shortage; alternatives include recruiting inactive or unemployed local

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workers, outsourcing to other countries with lower labour costs, and/or increasing working time of currently employed workers.

2.1. Review of main sources of data and methods

Next paragraphs provide an overview of main sources of data which are commonly used assess labour market dynamics and, thus, identify labour shortages and foreign labour demand needs. The aim is providing a reference from the international literature for assessing RF's main data sources.

Overall, labour market forecasts and projections are largely meant to manage labour demand and supply, addressing potential mismatches and making the most of the opportunities that arise. Despite they are often criticised for not reaching precise results, the public sector should devote significant resources to data collection and forecasting analysis in order to support decisions in the labour market for employers, workers and policy-makers.

Essentially, labour markets are imperfect and there are long time lags between investment in skills and when the latter are actually available. The prospective assessment of skills and labour market needs is an essential instrument for effective policy-making in a number of areas. It supports the functioning of labour markets as well as the internal mobility of labour, and foreign labour recruitment. Labour market projections and needs assessments allow for a better match between labour supply and demand, as well for a better definition of the content and structure of education and training systems. Therefore, without information of prospective nature about mismatches between labour demand and supply will result in inefficiencies in the labour market as a whole (i.e. unemployment, wage distortions, unfilled vacancies). Specifically to foreign labour needs, it is important to assess the nature of existing and potential labour shortages (absolute and relative) on the basis of robust labour market information.

There is a vast range of different tools and techniques, namely⁵:

- a. Surveys of employers or other groups (these approaches may include some quantitative aspects but are generally more qualitative)
- b. Formal, national-level, quantitative, model-based projections;
- c. Ad hoc studies (combining both quantitative and qualitative methods), specifically assessing the situation in particular sectors or occupations (and which may involve elements of both (a) and (b)).
- d. Prospective assessments with scenario development exercises based on expert opinion (by setting up 'observatories', focus groups, round tables and Delphi-style methods)

Each of these methods presents specific strengths and weaknesses, as summarised in table below (Wilson et al., 2004). Overall, it is important to recognise that accurate and precise forecasts are not achievable. The key question to ask is not whether or not such projections are accurate, but whether or not they are useful. Therefore, a variety of

⁵ See also Wilson (2008a, 2008b), European Commission (2008).

different approaches should be combined, rather than seeing them as mutually exclusive alternatives. Besides, any of such assessments is to be seen as dynamic, as part of an on-going process rather than a definitive word.

Table 1 - Methods for labour market needs assessment and their advantages and disadvantages

Alternative methods	Advantages	Disadvantages
Formal, national-level, quantitative, model-based projections	Comprehensive Consistent Transparent Quantitative	Data demanding Costly Not everything can be quantified May give a misleading impression of precision
In-depth sectoral or occupational studies (using a variety of quantitative (model-based) and qualitative methods)	Strong on sectoral specifics	Partial Can be inconsistent across sectors
Surveys of employers or other groups, asking questions of fact and opinion about skills, skill deficiencies and skill gaps	Direct 'user/customer' involvement	Can be very subjective Inconsistent Can too easily focus on the margins (i.e. current vacancies) rather than skill needs within the whole workforce
Focus groups, round tables Observatories Delphi-style methods Scenario development Foresight	Holistic Less demanding data requirements Direct 'user/customer' involvement	Non-systematic Can be inconsistent Can be subjective
<i>Source: Wilson et al., 2004</i>		

Following the methods above, some points can be pinpointed to the specificities of foreign labour needs assessment.

Foremost, it should be noted that linking labour migration policy to the domestic labour market is a complex task. This is particularly related to the concepts and measures required. Taking labour shortages measurement as example, there is no unanimously agreed definition or measurement method at international level. Nonetheless, operative definitions are generally agreed and established in line with the policy objectives and tools in place. Specifically, this implies that most commonly used indicators for labour or skills shortages are the following:

- unfilled vacancies (and a range of related indicators), which are meant to point to difficulties in obtaining skills from the external labour market;
- skills gaps, which reflect a lack of skills among those currently employed, and, thus, reflecting skill deficiencies in the internal market.

Administrative data about vacancies

First, information on unfilled vacancies is frequently obtained from administrative sources, i.e. vacancy registers at the employment services. In many countries, public

employment services maintain databases of this kind. However, while comprehensive for certain types of jobs and sectors, they tend not to be representative of the labour market as a whole, especially not for higher-level vacancies, which are often advertised through private rather than public agencies. Also, hiring by households for domestic services are underestimated, and in those sectors for which private employment agencies are more used among employers. (See next text box for further details about advantages and disadvantages of vacancy registers)

Table 2 – Vacancy registers: strengths and weaknesses

Vacancy registers	
Advantages	Disadvantages
<ul style="list-style-type: none"> ◇ Registered vacancies are administrative data, thus available regularly and almost immediately ◇ More cost-effective compared to a regular survey ◇ Possibility to calculate time series backwards to start from the beginning, which allows for tracing and diagnosing changes in the size of market demand ◇ The archive includes both stock and inflow of vacancies, and, possibly, breakdowns by occupations ◇ Measure and explanation of employment services market penetration (coverage) 	<ul style="list-style-type: none"> ✘ Registered vacancies are only part of the market ✘ Data on economic activities and occupations may not be harmonised to classifications used in standard surveys ✘ Double counting may be a problem in some employment services ✘ Heterogeneity of data (e.g. captured vacancies may or not include the temporary work agencies ones)

Therefore, a precise and effective tool for identification of recruitment difficulties cannot be derived from simply observing developments in stocks and flows of notified vacancies. Due to the relative unreliability of vacancy statistics in most countries, alternative qualitative and quantitative methods, typically employer surveys, are used to measure current imbalances in skills demand and supply, and, hence, estimate the magnitude and composition of skill and labour shortages.

Employers' surveys

Moving to the international evidence about employers' surveys, they seem to be another cost-effective way of projecting labour market needs. They are especially preferred instruments when existing statistical infrastructure does not allow for more formalised econometric analyses.

In spite of the fact of the diverging scope and scale of employers' surveys carried out in various countries, most of them intend to monitor and measure the following elements: (i) changes in the historical employment structure (i.e. demand for skills); (ii) possible future skill needs; (iii) current skill shortages and skill gaps, including vacancies; (iv) recruitment practices; (v) adaptability to change; (vi) links between skills and performance; (vii) training activities; and (viii) any other skills-related issues.

An example in this regard is provided by the National Employer Skills Surveys for England, which have been performed since the late 1990s in order to estimate the scale and patterns of both internal and external skill shortages. The surveys are coordinated by the National Learning and Skills Council and it is aimed to guide policy-makers and

individuals. Since 2001, they have been carried out every two years. The data is collected through a structured questionnaire and phone interviews to employers. They provide representative data by sector, occupation and geographical area, at a quite detailed level of disaggregation.

Another example is the private-led Italian Excelsior Information System carried out by Unioncamere (Union of Italian Chambers of Commerce), in agreement with the Italian Ministry of Labour and Social Affairs and the EU (European Social Fund). After a decade, this survey on business hiring intentions is a standing source of information about the performance and future developments of the Italian labour market. Among other things, employers are asked about their hiring intentions for foreign workers in the following year by occupation. The sample methodology is such that ensures data is representative at the regional and occupational level.

Table 3 – Employers’ surveys: strengths and weaknesses

Employers’ Surveys	
Advantages	Disadvantages
<ul style="list-style-type: none"> ◇ A first-hand information on skill needs; ◇ An ‘insight’ to ‘demand’; ◇ Possibility to get qualitative information on skill and competence requirements, their changes, skill gaps among specific categories (occupation, education, graduates); ◇ A chance to verify and understand the processes. 	<ul style="list-style-type: none"> ✘ Time and resource consuming ✘ Companies’ exhaustion from being surveyed, ✘ Subjectivity of information, ✘ Inflated/deflated data, ✘ Limited capacity of employers to look beyond presence, ✘ Lack of broader contextual awareness among respondents.

However, it is also true that past experience at international level has shown that employers might provide biased and inconsistent results (See text box). In particular, they may be too focused about their firm and local constraints, which makes difficult for them to, in many cases, take due account of additional key (current and future) factors. Ultimately, they are concerned about recruitment difficulties rather than labour shortages per se. Therefore, complementary information is required to reach more consistent and comprehensive visions of these factors, consequences and possible alternatives or strategies. For example, solutions may be by matching employers’ perceptions with additional quantitative indicators (i.e. based on data from labour supply-side sources) as well as qualitative information from collective discussion at sectoral or regional level of employers (i.e. through the setting of sectoral or regional councils).

Despite these limitations, employers’ surveys still constitute a main source of information since they provide crucial insights on current trends as well as providing elements for projecting data into the future. Besides, they are particularly advantageous for labour migration-related monitoring whenever employers’ surveys collect detailed information (i.e. broken down by occupation) about changing patterns in demand, as well as wages, which can be of help to identify occupations where there is a case of allowing for inward migration.

Household surveys and Censuses

Household surveys (such as the labour force survey) and censuses provide the richest source of labour supply-side and demographic information which is fundamental to assess trends in skills and occupations profile of learners and workers.

The particular advantage of population censuses and surveys with respect to administrative data is that they yield information which is solely used for statistical purposes. Hence, the information provided through surveys does not have direct consequences for the interviewees who are thus able to reply without constraint or apprehension. This is particularly relevant for the collection of information about current migrant communities. (Hoffmann and Lawrence, 1995)

Specifically, population censuses provide aggregate information on migration. However, a major drawback of population censuses is that the data collection costs are relatively high and the information obtained is not always timely. Population censuses are normally only conducted once every ten years.

On the other side, annual labour force surveys enable closer analysis of the migration situation. The samples of these surveys are reasonably large and representative of the country's working-age population. Labour force surveys may also include questions on place of birth, citizenship and previous residence, as well as other aspects of migration, such as reasons for moving. The International Labour Organization (ILO) is currently testing a number of migration-related questions for inclusion in international labour surveys, Thailand and Armenia being one of the test countries (Schachter, 2006).

Still, household surveys also have limitations because of small sample sizes, particularly for certain groups such as migrant workers. This reduces the comprehensiveness of data, particularly with regard to inferring about overall stocks and flows of migrants, even if detailed labour force information is collected from them. An additional limitation of household surveys is that they often do not collect information from collective housing, where many migrant workers often live.

Table 4 – Labour Force Surveys: strengths and weaknesses

Labour Force Surveys	
Advantages	Disadvantages
<ul style="list-style-type: none"> ◇ Robust methodology and data collection which ensure statistically adequate databases; and hence: ◇ Broad range of issues covered; ◇ Possibility to get information broken down by skill, occupation and geographical location; ◇ Availability of time series for an assessment of changes over time in skill requirements, their changes, skill gaps among specific categories (occupation, education, graduates) 	<ul style="list-style-type: none"> ✘ Time and resource consuming; ✘ Sample may not be large enough to cover certain categories of workers, such as migrants, or to accurately estimate other relevant issues, like migration flows; ✘ Availability of datasets may not be timely enough.

Quantitative model-based projections

A more sophisticated and data-demanding method for labour market needs assessment are model-based projections. A range of medium- and long-term

forecasting activities of different types are being carried out in many countries. Such models are considered as necessary to estimate robust and consistent sectoral employment scenarios, which are the starting point for any comprehensive assessment of changing skill needs. In the US, the Bureau of Labour Statistics has conducted projections since the 1950s to guide decision-making by policy-makers and others. They are currently carried out on a biannual basis. Similar experiences can be found in other countries, such as Canada and the Netherlands.

For instance, at EU level, much effort has recently been devoted to the development of a forecasting model that provides on a regular basis estimates of skills needs in Europe. Specifically, CEDEFOP (European Centre for the Development of Vocational Training) has been in charge of building such a forecasting model which intends to provide regular forecasts over a 5-10 year horizon measured by occupation and qualification. They involve comparisons between supply and demand to identify possible imbalances on the labour market and an evaluation of projections against outcomes. (See CEDEFOP, 2007, 2008)

While differences are found across countries in the specific methodologies applied, the medium term forecasts refer to a five-year period, while the longer term estimates look up to 10 years or even more. In most cases, countries also produce a short-term profile showing how things are expected to evolve from year to year. In countries where medium and long term forecasting methods are not apparent, short-term projections, surveys, studies and qualitative methods are typically adopted. These projections are generally based on a multi-sectoral macroeconomic model which produces very detailed quantitative projections of employment by industry and occupation for the whole country, and geographical subareas, over the medium and longer term.

There are a number of reasons for favouring a model-based approach, but also there are some problems and pitfalls which have to be also taken into account. On the one hand, models are comprehensive and allow for a great level of disaggregation by sectoral and even occupation. On the other hand, they are data-costly, which may be a significant limitation when there are technical limitations and scarcity of resources at disposal. Besides, their estimates tend to overstate the importance of past patterns of behaviour. (See text box)

Table 5 – Quantitative Model-based Projections: strengths and weaknesses

Quantitative Model-based Projections	
Advantages	Disadvantages
<ul style="list-style-type: none"> ✧ Sectoral and other detail it provides; ✧ Comprehensive, covering the whole economy; ✧ Logical consistency; ✧ Imposition of accounting constraints; ✧ Recognition of economic constraints and influences; ✧ Underlying assumptions are made explicit; ✧ Consistent scenarios across all sectors. 	<ul style="list-style-type: none"> ✧ Time and resource consuming; ✧ Quality depends on developed statistical infrastructure; ✧ Results are highly dependent on original assumptions about main underlying factors; ✧ Availability of datasets may not be timely enough.

Despite above-mentioned limitations, censuses and household surveys are the richest source for quantitative model-based projections of population and labour force

information, relevant for migration purposes. However, a number of challenges should be taken into account when anticipating labour needs on the basis of these sources due to certain issues, linked to uncertainties over life expectancy and labour supply composition sensitivity to labour demand trends, as well as to reservations about the actual accuracy of projections for migration flows (internal and international).

Reservations about projections based on data from censuses and household surveys

- Uncertainties over life expectancy: life expectancy projections are subject to uncertainty, past projections in Europe from official sources have often underestimated the gains in life expectancy;
- Labour supply is sensitive to labour demand: employment rates are themselves sensitive to labour demand, the wage rates for different skill groups, and conditions affecting decisions to retire or otherwise become inactive;
- Estimating migration inflows: compared to fertility and mortality, immigration flows are harder to predict, given that are more volatile and highly dependent on complex political and institutional factors. Besides, in many countries, data on migration are scanty and it is particularly difficult to project migration flows. Hence, in order to improve projections' predicting power, it is important to reinforce measurement capacity while making sure that approaches to estimating migration flows do not vary widely across official national agencies;
- Estimating internal migration: policy efforts to encourage inter/intra-regional mobility may affect labour supply in local labour markets, as well as rural/urban (and urban/rural) migration movements. Yet, anticipating the potential scale of such changes is highly problematic. Still, such trends have important consequences for effective levels of labour supply and, hence, employers have a strong interest in anticipating the effects of these movements in the local labour market supply;
- Estimating composition of labour supply: some characteristics associated with likely labour market success are more difficult to identify; as economies develop and career paths become more complex, formal occupational qualifications and experience become relatively less relevant than generic competences.

Overall, since the quality of any forecasting model depends heavily on the statistical infrastructure available in each country, more sophisticated quantitative methods are only feasible, and reliable, where the state has made a substantial prior investment in data (e.g. making available consistent time series of employment and other key indicators). In most of the countries that do conduct regular national assessments of future occupational and skill requirements, such models are regarded as an essential cornerstone, albeit they are usually complemented with additional relevant information. Such models are increasingly being adopted in developed, as well as developing, countries in line with improvements in the availability of data and the model-building capacity. However, such approach is difficult to adopt in cases where informal economy is significant and not adequately estimated through official data.

Comprehensive sectoral analysis

At EU level, there is recognition of the need of carrying out specific sectoral studies to gather information about current and emerging labour shortages and skill needs. For instance, the European Commission has recently commissioned a number of sectoral studies using a common foresight methodology. Sixteen sectors⁶ have been selected as

⁶ The sixteen sectors are: textiles, wearing apparel and leather products; printing and publishing; chemicals, pharmaceuticals, rubber and plastic products; non-metallic materials (glass, cement, ceramic, etc.); electromechanical engineering; computer, electronic and optical products; building of ships and boats; furniture and other; electricity, gas, water & waste; distribution and trade; hotels, restaurants,

sensitive and the very same methodology has been applied to each of them. In particular, the analysis consists of seven steps:

1. mapping of the sector, including analysis of main economic and employment trends, importance of the value chain and outsourced services, as well as a SWOT analysis;
2. identification of the main drivers for change and the main emerging or changing skills and competences in the sector;
3. sketching the main scenarios for plausible evolution and their implications for employment trends over a period up to 2020;
4. identification of implications for competences and occupation profiles in terms of jobs expanding, transforming or declining;
5. outlining strategic choices to meet the sector's skills needs;
6. identification of specific implications of the sector's skills needs for education and training;
7. recommendations addressing the different stakeholders (social partners, public authorities at the various levels, institutions for training and education).

Hence, in this type of exercises, the scenarios are not built on the basis of an extrapolation of past trends, but rather they build upon the drivers of the future evolution of the sector, which mostly respond to structural factors (rather than cyclical). The studies are not limited to the sector in a narrow sense, as they include value chain and outsourced services. The results of these studies are then submitted to a panel of experts in that sector. The panel is composed of experts from the industry, social partners, academics and experts in education and training. They are supposed to reach consensus about the conclusions and recommendations. Besides, once all sectoral studies have been completed, a study will examine cross-cutting aspects which will reveal linkages and complementarities across sectors.

As a matter of fact, in the field of anticipatory analyses, foresight exercises are being increasingly recognized. Four characteristics distinguish foresight from other techniques (i.e. quantitative projections and surveys): (i) foresight activities are frequently more multidisciplinary and open to various types of information (quantitative and qualitative); (ii) assuming that alternative futures are possible, these activities include the identification and description of scenarios; (iii) foresight is participatory, because it is built on the knowledge and expertise of various stakeholders; and (iv) it is action-oriented, because it considers the actions that should be undertaken to build the future. Hence, foresight exercises not only involve thinking about the future, but also debating it and shaping it⁷.

This type of analyses highlights the importance of complementing quantitative projections and indicators with qualitative exercises since they provide relevant contextual information, such as new trends in competence requirements, forms of organisation, industry dynamics and technological developments, as well as employers' strategies and the threats they face.

catering and related services; transport; post and telecommunications; financial services (bank, insurance and others); health and social work; and, other services, maintenance and cleaning.

⁷ See FOR-LERAN Online Foresight Guide, JRC-IPTS, http://forlearn.jrc.ec.europa.eu/guide/0_home/index.htm

Migration-specific administrative records and other sources

Many of the official sources for migration data respond to administrative purposes rather than to statistical objectives to obtain sound estimates of migrant stocks and flows. They can also provide basic data to estimate the size and composition of migration inflows, as well as to gather information about the labour market position of current resident migrants, not to mention some data to indirectly estimate irregular migration. In particular, this consists of administrative records about visa issuance, border controls, as well as work permits and residence permits archives. However, statistics compiled from such sources may frequently result unsatisfactory in terms of coverage and accurateness. These registers are often used to measure the total stocks of international migrants in a country, as well as inflows when new migrants are recorded (usually after one year in the case of population registers) and outflows when people de-register and leave the country. (IOM/OCSE/ILO, 2006, 2007)

For instance, data on visa issuance is such an administrative source of information about migration. These archives, together with records for residence and work permits, are useful to produce data about specific categories of international migrants (i.e. motivations for entry: work, study, family reunification). However, since migration movements may occur repeatedly over the life cycle, it is difficult to determine with precision estimates for migrant stocks and flows. As a matter of fact, are a popular source for measuring labour migration inflows in many countries. Visa issuance can still be cross-checked with information collected at the border control, through migration or passenger cards. This highlights once again the relevance of linking different information systems for the purpose of better measurement based on administrative data.

As mentioned above for vacancy registers, administrative records can be reliable sources of statistics in cases where the administrative system is well organized, the quality of reporting is sound and coverage is reasonably complete. This is often not the case, especially in countries that lack the appropriate resources to ensure complete coverage. Coverage and correct reporting can nevertheless be improved by combining adequate incentives and penalties. The main advantages of such source of information are that collection costs are low, and that the archives may be extremely detailed. However, there may be high processing costs to convert administrative records into useable forms. Another constraint of administrative data is that the concepts, definitions and classifications respond to the legislation and/or administrative procedures which are often different from those required to meet statistical user needs. Furthermore, some administrative records, such as local registers, may not be sufficiently updated whenever there is significant job or population mobility.. Thus, the data content of administrative records often remains insufficiently exploited. An important step for the use of these data for labour market analysis is to investing in centralised data collection, which links the different relevant registers (such as social security, tax registrations). A good example of such centralized data collection can be found in Scandinavian countries, as well as more recent experiences in Belgium and the Netherlands, where different data sets have been linked. (Hoffmann and Lawrence, 1995; Pember and Djerma 2005))

At international level, there are a number of initiatives to move away from statistics based on number of procedures to individual-based statistics. These have been introduced in countries that do not rely on local population registers. For example, Australia has improved its border registration statistics by introducing a single personal identifier for each arrival/departure passenger card record to match it to other passport movement practices within the immigration system. As such, this measure avoids double counting and provides more accurate data on movements to and from Australia. (Corr et al., 2005)

Usually, there are no systematic official statistics on irregular migration. It is an extremely difficult task due to the unrecorded nature of the phenomenon. Further, measurement and comparability are complicated because relevant data may be recorded following different definitions, sources, collection methods and legislative differences between countries. Another problem is due to the dynamism and fluctuation in the size of the illegal population which in turn much is related to the intricacies of the immigration law as to the movements of the migrants themselves. Hence, no existing method provides sufficiently well-founded estimates of irregular migration. Statements about the size of the phenomenon tend to be drawn indirectly through data collected for law enforcement purposes, such as border controls. Due to sensitivity of this information, such data are rarely shared not released for public use. However, it is important to address this, so that all relevant institutions dealing with migration enjoy access to all relevant information sources. (Jandl, 2004)

Occasional surveys on remittances prove useful to assess the magnitude and destinations of financial flows transferred by migrants back home. Particularly, they can provide indirect information about the presence of migrants, their income levels as well as return or family reunification intentions. Further, the irregular share of the migrant population could be indirectly inferred on the basis of comprehensive surveys on remittances (Jandl, 2008). It is nevertheless recognised that measurement may be so far approximate and treated as complementary to other estimates. There might be problems arising from the fact that financial sector transfers may not necessarily carry information about the originator and recipient of the funds. Also, many remittances are not sent through financial sector institutions, to avoid taxes or because effective and reliable institutions do not exist in the receiving country. Then, reliable estimates need to understand the ultimate incentives for correct and complete registrations.

In conclusion, consistent assessments about labour market needs to be holistic, based on a combination different sources of data and approaches. Conclusions about shortages should not be based on general labour market statistics alone or anecdotal evidence alone, but on a comprehensive range of data and measures of labour market conditions. In fact, employers' assessments may be biased in their assessment and may only give a partial picture of the overall labour market tightness. They should be complemented with labour market indicators such as employment, unemployment, and earnings, if possible broken down by geographical area, sector, and occupation. Longer term aspects need also to be considered, by including data on demographic patterns, as well as of education and training statistics (i.e. enrolment, attainment by main disciplines). In the specific case of assessing foreign labour needs, further information about labour market tightness needs to be gathered about the composition of recent migration inflows and the labour market position of residing migrants. Last

but not least, current and potential occupational shortages can be complemented with sector-based analysis and stakeholders consultations which should focus on one occupation or a group of related occupations and should provide a detailed investigation into factors affecting supply and demand.

2.2. Review of specific indicators

Considering above survey of information sources, countries have then relied on a series of indicators which measure the presence, and nature, of labour shortages, and whether these can be filled by domestic labour force or rather by recruiting foreign workers. The present section reviews the recently developed sets of indicators in UK, Spain, and Italy for the purposes of improving migration planning. While the British system is linked to a points-based system aiming at attracting skilled workforce, the Spanish system is meant to systematically capture short-term labour market tensions at a significant level of detail. They both respond to a large investment by authorities in order to develop robust measurement of foreign labour market needs. On the one hand, the UK system has devoted large efforts to the development of a methodology which is theoretically and conceptually well-grounded and exploits different sources of statistics. On the other hand, the Spanish approach responds to the large investment in creating a new instrument, a Catalogue of Occupations Difficult to Cover, which points to exploit information from administrative registers. Additionally, the Italian case provides an example of a more aggregated approach to the measurement of labour migration needs.

2.2.1. UK

In 2008, the Migration Advisory Committee (MAC), composed by a team of labour economists appointed by the UK authorities, proposed 'top-down' indicators to measure labour market imbalances in the UK. The set of 12 indicators (see next table) is meant to assess labour shortages in UK in line with the requirements posed by the newly introduced points-based system for labour migration management. This information is then complemented with 'bottom-up' evidence from employers' and skills councils.⁸

The final set of indicators is the result of a selection from an original list of 70 possible indicators. Basic criteria applied to narrow down referred to availability of data (i.e. levels of disaggregation, timeliness of the data) and the reliability (validity of the measure in capturing labour shortages; sample representativeness of the reference data source is ensured for required levels of detail).

Indicators are disaggregated by occupation down to the 4-digit level of detail according to the ISCO standard codes. As reported in the table above, main data sources are employers' surveys (the National Employers Skills Survey, NESS), supply-side surveys (Labour Force Survey, LFS; Annual Survey of Hours and Earnings, ASHE), and administrative-based archives (Jobcentre Plus). The frequency of each of

⁸ This section just provides an outline of the indicators used within the UK system relevant to the purpose of the present methodology development for the Russian Federation. For further detail please refer to Sander Lindstrom and Baruah (2008) and MAC (2008).

the indicators differs somehow, because the availability of data hinges upon on the collection methodologies of these different sources.

Table 6 – UK Twelve indicators of shortage

Indicator	Frequency available	Date/period used	Source used
Employment-based indicators			
1. Percentage of skill-shortage vacancies/employment by occupation	Biannually	2007	NESS and LFS
2. Percentage of skill-shortage vacancies/all vacancies	Biannually	2007	NESS
3. Percentage of skill-shortage vacancies/hard-to-fill vacancies	Biannually	2007	NESS
Price-based indicators			
4. Percentage change in median hourly pay for all employees	Annually	2006-07	ASHE
5. Percentage change in mean hourly pay for all employees	Annually	2006-07	ASHE
6. Relative premium to an occupation, given NQF3, controlling for region and age	Quarterly	2007	LFS
Volume-based indicators			
7. Percentage change of unemployed by sought occupation	Monthly	2007-08	Jobcentre Plus
8. Percentage change of hours worked for full-time employees	Annually	2006-07	ASHE
9. Percentage change in employment	Quarterly	2006-07	LFS
10. Absolute change in proportion of workers in occupation less than one year	Quarterly	2006-07	LFS
Indicators of imbalance based on administrative data			
11. Absolute change in median vacancy duration	Monthly	2007-08	Jobcentre Plus
12. Stock of vacancies/claimant count by sought occupation	Monthly	2007	Jobcentre Plus
Source: MAC (2008)			

More in detail, the set is divided into four types of indicators. First, there are employer-based indicators which refer to skill-shortage vacancies and are mostly obtained from the NESS. While this survey is a rich source of information, it has a major limitation because it does not allow for monitoring changes in job vacancies in a systematic way over time. In fact, the absolute number of skill-shortage vacancies does not consider the natural vacancy rate for a given occupation. Then, an adjustment is introduced so that the amount of skill-shortage vacancies is normalised by the proportion of employment (Indicator 1), the proportion of all vacancies (Indicator 2), and the proportion of hard-to-fill vacancies (Indicator 3). Additional information for these estimates is based on the LFS. Hence, these indicators combine two types of data, and there are a few issues associated to this, which have already been identified by the MAC for future review. For instance, the NESS collects information about occupations to only 1-digit level of detail.

Second, there are three price-based indicators. These are based on change in median hourly pay (Indicator 4); and change in mean hourly pay (Indicator 5). The hourly pay

is preferred to the annual wage, because the former comprises larger sample sizes in reference data source (ASHE) and is less subject to changes in working hours. Variations in gross wages for both full-time and part-time workers were considered, in order to cover a larger share of the labour market. The median of the distribution is not affected by outliers, while the mean is more influenced by changes at either end of the distribution⁹.

Another price-based indicator is the relative premium to working in a certain occupation for an individual with a level 3 qualification (National Qualifications Framework-3, NQF3) occupation (after controlling for age and region of the worker) (Indicator 6). The underlying idea is that of capturing upwards re-negotiation of wages as response to shortage. Thus, the higher the observed relative premium to an occupation, the more probability there is a shortage in that occupation¹⁰.

Third, volume-based indicators are also included which combine different sources of data (LFS, ASHE, and Jobcentre Plus). A first indicator is the annual percentage change in unemployment (Indicator 7), which is measured by the number of people applying for any given position. It is noted that this indicator is built on data from the Jobcentre Plus (which is the administrative system collecting statistics of employment services), even if ideally it should use LFS data. Next, there is the annual percentage change in hours worked for full-time employees (Indicator 8), which is calculated on the basis data from the ASHE. A third indicator measures the annual percentage change in employment estimates using LFS data (Indicator 9). The last volume-based indicator is the absolute change in the proportion of people working in their job for less than a year (Indicator 10), which is also obtained from LFS data.

Last but not least, two indicators of imbalance are also included. Data come from the Jobcentre Plus. Indicators are determined by the absolute change in the median time that vacancies are advertised (Indicator 11). The absolute change is believed to provide a better estimate of shortage relative to proportional change, because of relatively small initial durations¹¹. The second imbalance indicator is the vacancy/unemployment ratio (Indicator 12), which is defined as the number of unfilled vacancies divided by the number of unemployed people in a certain occupation. Due to natural friction in the labour market, such indicator is necessary in order not prevent incorrect identification of shortages. In fact, it is important to ensure that occupations with high turnover (with both high amount of vacancies and high unemployment levels) are not treated as facing a shortage.

⁹ For example, shortages may lead just some firms in an occupation to pay more and this is more likely to be picked up by the change in mean. Therefore, by using both median and mean pay indicators we have an overall assessment of shortage as indicated by changes in pay. (MAC, 2008)

¹⁰ MAC also mentions another option, which consists of taking the rate of return to qualifications, instead of the premium to occupations. However, it requires a more complex calculation, and it is thus left for further research in the future. (MAC, 2008)

¹¹ If an occupation begins with a vacancy's duration of 2 days which then increases to 4 days, this would be a 100 per cent increase. If, instead, a job was initially vacant for 40 days, increasing to 60 days, this would only be a 50 per cent increase; however, the latter would imply a stronger indication of shortage. This is why absolute change is preferred to build the corresponding indicator. (MAC, 2008)

Given that each of the twelve key indicators partially represents shortage, there might be some correlation among them, albeit each of them is affected by other factors in different ways. MAC (2008) ran a series of tests to assess the correlation between the selected indicators. As results, on average the directions of significant correlations were as expected. For instance, the skill-shortage vacancies/ all vacancies indicator and the vacancy/unemployment ratio were those with the strongest and significant correlations. Likewise, employer-based indicators were also highly positively correlated because they all involve skill-shortage vacancy data.

Next, a threshold value for each of the 12 indicators was established. An initial assumption is established for which an occupation is not showing signs of a shortage if the occupation is at the centre of the distribution for that indicator. It is argued that the median is more suitable than the mean to take due account of the absolute distribution. And, after considering different options, MAC decided to apply the 'median+50%' as threshold. Whenever the value of an indicator would exceed that threshold, a shortage would exist. The only exception is the percentage change in unemployment, because lower levels of unemployment would imply shortage, and, then, the condition is reversed for this indicator.

It should certainly be noted that exploiting existing sources of data for the measurement of labour shortages is a cost-effective alternative. However, it should also be reckoned that combining different sources of data requires taking due account of the fact that methodology and calendars of data collection differ across data sources. Specifically, this raises some issues as regards the time of reference for each of the indicators and, also, possible breaks in the time series whenever a change is introduced to any of the reference data sources. For instance, given methodological changes introduced the way vacancies were measured in Jobcentre data in 2006, there is a break in the time series as regards to the two imbalance indicators. Data before and after April 2006 are not comparable, and it is not possible to compare the averages in 2006 to those in 2007. Instead, the two data points used for comparison are March 2007 and March 2008.

Once the shortage indicators were agreed, the MAC could merge information on potential shortages obtained through top-down data with the evidence produced from the grass-roots level from employers, trades unions and skills councils. As results a short list of occupations facing shortages was released for the purposes of labour migration management through a points-based system.

2.2.2. Spain

The Spanish Catalogue of Occupations Difficult to Cover (for simplicity, hereunder referred as 'Catalogue') was established in 2005 and aims to contribute to a better linkage between labour migration and domestic labour market needs. It is a new instrument which has largely benefited from large investments in modernisation of employment services all over Spain. In particular, many resources have been devoted to harmonising data archives in highly decentralised national Public Employment Services (PES)¹².

¹² During the very same year, the new information system of the PES ('Sistema de Información de los Servicios Públicos de Empleo' - SISPE) was launched, and this constituted an essential element for the

As in many other countries, in Spain, employers can only recruit foreign labour if no suitable domestic workers are available. In that sense, the development of the Catalogue policy tool was perceived as a tool to facilitate the monitoring of the labour market so as to facilitate the labour market needs test.

Specifically, whenever an occupation is reported in the Catalogue of a certain province, employers can directly apply to the Migration authority at provincial level for the admission for residence and work of a foreign worker being hired in his/her country of origin. In other words, if the occupation to be filled by a prospective migrant appears in the Catalogue, the employer is not required to publicly register the vacancy at the employment services register¹³.

The Catalogue contains those job positions for which local offices of the Public Employment Services have encountered difficulties to cover. Hence, the national catalogue covers all Spanish provinces and is broken down by occupations. It is prepared in a quarterly basis in the first twenty natural days of the first month of each quarter. Reference data corresponds to the previous four quarters and occupations are broken down to an 8-digit level of detail (compatible to EU standard ISCO88-COM). Once released, each edition of the Catalogue is valid as from the second till the last working day of the quarter following its publication¹⁴.

A set of four indicators is applied nation-wide in order to select occupations to be listed in the Catalogue. Namely, the indicators are: Indicator of the degree of Intensity ('Indicador del grado de Penetración en el mercado de trabajo', or IP), Indicator of the degree of Difficulty to cover ('Indicador del grado de Dificultad para cubrir ofertas de empleo', or ID), Indicator of the Scarcity of candidates ('Indicador de Escasez de demandantes de Empleo', or IE), and and Indicador of internal Mobility ('Indicador de Movilidad geográfica real', or IM).

In order to calculate the indicators, the following information is collected by the PES at province level for each occupation:

1. Average amount of job candidates registered at the end of each month (each candidate can apply up to six occupations).
2. Total amount of job offers registered by employers all over the year.
3. Number of contracts officially communicated at the Public Employment Services in the last year.
4. Number of workers that enter the local labour market: number of contracts in a province for workers coming from another province.
5. Number of workers that leave the local labour market: number of contracts of workers of the province that go to work in another.

coordination of the different institutions (provinces, ministry) involved in the preparation of the Catalogue.

¹³ Conversely, if an occupation is not included in the Catalogue, the employer will have to register the offer in the Public Employment Services and demonstrate that it cannot be filled by resident workers, before a request for the admission of a foreign worker from abroad can be presented.

¹⁴ The present section reviews the indicators used within the Catalogue to identify vacancies difficult to cover by occupation and province. For further information on the institutional process see Estruch and Zupi (2008).

6. Number of workers that stay: number of contracts of workers of the province that will work within the province.
7. Number of job placements: number of job placements of job seekers over the period.

On the basis of this data, the indicators are calculated. The next table summarises information relating to the calculation and thresholds for each of them:

Table 7 – Spain Catalogue of Occupations Difficult to Cover: Indicators

Indicator	Calculation	Threshold
Level of intensity in the labour market (IP)	$IP = (\text{number of job offers} / \text{number of contracts})$	$IP_{\text{province level}} > IP_{\text{national}}$
Scarcity of candidates (IE)	$IE = (\text{average amount of job candidates} / \text{number of job offers})$	$IE_{\text{province level}} < IE_{\text{national}}$
Level of difficulty to cover (ID)	$ID = (\text{job placements} / \text{average amount of job applications})$	$ID_{\text{province level}} > ID_{\text{national}}$
Internal mobility (IM)	$IM = (\text{workers entering} + \text{workers leaving}) / (\text{workers entering} + \text{workers leaving} + \text{workers remaining})$	$IM_{\text{province level}} < 0,30$

First, the Indicator of the degree of intensity in the labour market (“Indicador del grado de penetración en el mercado de trabajo” or IP) relates the number of job offers over the year with the number of contracts officially registered for a certain occupation. It indicates whether there is sufficient information about a certain occupation in the local information databases. Hence, the level of intensity for a certain occupation is considered as acceptable when the indicator for a certain occupation at province level is equal or above the average national value for all occupations.

Second, the Indicator of the scarcity of candidates (“Indicador de escasez de demandantes de empleo” - IE) relates the average amount of job applications for a certain occupation with the number of job offers posted for that occupation. The value at province level for each occupation is compared against the national average for that occupation. There will be scarcity of applicants for that occupation if the value of its IE is equal or below the national average for all occupations.

Third, the Indicator of the degree of difficulty to cover (“Indicador del grado de dificultad para cubrir ofertas de empleo” - ID) introduces a new dimension, as it estimates the probability that applicants’ expectations about finding employment in a certain occupation are fulfilled. The indicator is calculated from the relation between job placements for a certain occupation and the number of job applications for that occupation. If the indicator for a certain occupation is below the average national value for all occupations, the labour market shall not allow the entry of further foreign workers as any additional foreign worker shall hamper the possibility of finding employment of current job seekers.

And, fourth, the Indicator of internal mobility (“Indicador de movilidad geográfica real” - IM) expresses the level of mobility within a certain local labour market. For a certain occupation in a certain province, the indicator takes into consideration those moving to other provinces and those finding employment in the very same one in

which they are registered. As the formula below describes, the numerator is the sum of number of workers finding employment in a province other than the one where they are registered as job seekers, and the number of workers that enter into the local labour market as they find a job in the province but they were registered as job seekers in another one. On the other hand, the denominator considers again the previous two variables and a third one, that of the workers that effectively get employed in the same province (i.e. they do not move from/to another province).

Thus, this indicator measures the level of mobility on a scale from 0 (labour market close or static) to 1 (labour market highly mobile). It has been determined that the local labour market for a certain occupation will be sufficiently dynamic when the indicator for that occupation takes a value equal or above 0,3. And hence, that occupation shall not be included in the proposed Catalogue. The choice of this relatively low threshold is explained by the persistence of low inter-provincial mobility in Spain as a whole.

On the basis of the results, for an occupation being considered as difficult to cover in a certain moment of time (i.e. a quarterly edition of the Catalogue), it has to simultaneously satisfy the four thresholds. Nonetheless, the PES can also include or exclude occupations on the basis of their experience and knowledge about the dynamics of the local labour market. Similar corrections might be introduced later on after consultation to social parties.

Another interesting point to be noted is that whether using national averages to contrast regional cases, and do so for all occupations, (as currently the Catalogue does) is preferable to using province level averages as a threshold for each of the three first indicators. For instance, the use of a national average probably reduces the emphasis on differences in labour market from one region to another, and it simplifies the monitoring tasks at central level. Nonetheless, such simplicity could come at the expense of precision, as some occupations could be included/excluded not so much because of real occupational shortages, but for the particularities of a local labour market.

From the above paragraphs, we realise that through the Catalogue, Spain has made an effort to explicitly link the management of labour market modernisation and labour migration policy-making. Also, three main prerequisites can be identified for the creation of such an instrument, in particular:

- The availability of human and financial resources is essential for the development of such a tool. In fact, the Spanish Catalogue has been possible thanks to a homogenous and modern information system of the PES network. It is an example of how administrative information systems have been translated for analytical purposes.
- A homogenous system of indicators and a methodology for the assessment of occupations difficult to cover. For example, detailed classification of occupations (8-digit level of detail) is an important element to be able to identify labour needs.
- Participation of social partners at the two levels (local and central) ensures that the overall assessment responds to actual labour market dynamics. Such consultation exercises ascertain that the overall labour market is covered by the

procedure, recognising the particularities of certain sectors and geographic areas for which such methodology might be less suitable.

However, for the purposes of forecasting, information is still not sufficient, because the time series is too short. Also, it is still early to assess how adequately the use of the Catalogue fits the identification of labour shortages. Given that it relies on administrative data, heterogeneous results will probably emerge across regions, or certain occupations may be clearly underrepresented – domestic workers and high-skilled workers. Nonetheless, it is a remarkable operation that certainly sets the way for more comprehensive mechanisms for the selection of foreign workers. In this regards, linkages to foreign labour market recruitment and occupations listed in the Catalogue could be further reinforced. For instance, considering the growing number of family reunifications, conditions for entry of working-age relatives entering through this channel should be also connected to labour market needs. These individuals are likely to seek employment and this should be considered when projecting the needs for foreign workers in the future.

2.2.3. Italy

In the Italian case, it is interesting to highlight some points linked to the three-year migration planning document. Specifically, the 1998 Immigration Law requires the government to prepare a triannual migration planning document ('Documento programmatico relativo alla politica dell'immigrazione e degli stranieri nel territorio dello Stato'). In Italy, the 1998 Immigration law foresees a triannual migration planning¹⁵. This document is published by Presidential Decree and contains an assessment of main areas of intervention and delineates main policy guidelines on which quotas and other migration management mechanisms ought to be based. In practice, it is noted though that the three-year documents have tended to concentrate on the aspect of control and repression of undocumented migration.

Focusing on the methodological aspects used for migration planning of non-EU workers, a set of indicators is applied. It is meant to be a coherent framework that recognises difficulties to estimate labour demand. In particular, some limitations are mentioned:

- Uncertainty about economic performance and employment growth over those three years
- Complex interaction between employment and unemployment of foreign residents and new arrivals. In fact, trends show that new arrivals have more heterogeneous skills profiles and there has been an increase of family reunions.
- Also, since 2004, some new Member States, which are excluded from the planning, contribute significantly to fill labour shortages in Italy (especially, Poland, Romania, and Bulgaria). All these elements have an impact on the labour market.
- The presence of an informal economy and irregular work further complicates the estimates of non-EU labour needs

¹⁵ 'Documento programmatico relativo alla politica dell'immigrazione e degli stranieri nel territorio dello Stato', Article 3 of the 1998 Immigration Framework Law, or Testo Unico, N. 286/1998.

- The heterogeneous performance of Public Employment Services over Italy and general malfunctioning of data systems on vacancies

In view of these shortcomings, the methodological framework that is implemented covers three broad dimensions: demographic developments and related labour market dynamics, business and households' needs for foreign workers, and information from previous years, including applications for regularisations. Here below these elements are described, and figures correspond to the period 2007-2009.

1) Projections about demographic change and performance of domestic labour market

Under this heading, the migration document takes into account the decline of the active population and employment increase. Hence, it attempts to estimate the amount of foreign workers which would be necessary to tackle structural shortages, which result from aggregate labour dynamics and demographic patterns. Information is obtained from labour market projections prepared by the Ministry of Finance in the context of macroeconomic planning, based in turn on national accounts and on demographic projections by the National Statistics Institute, ISTAT.

Specifically, labour market macro dynamics are assessed in terms of the evolution of the employed working age population (15-64), which is estimated on the basis of national accounts and of the labour force survey. Hence, in order to obtain foreign labour needs, annual average changes are calculated for the forecasted number of overall employed population (1), the forecasted decline of working age population (excluding new foreign arrivals aged between 15-64 years) (2) and the forecasted number of employed aged 15-64 years (again excluding new working-age foreign arrivals) (3). Then, the annual change in overall employment (1) is added to the annual decline in working age population. The resulting figure is then diminished by the annual number of employed excluding new arrivals (3). For the period 2007-2009, 206.872 foreign workers would be necessary each year to cover structural labour shortages, as resulting from labour market dynamics and demographic ageing (see the table below, in-between parentheses the institution that provides the estimates).

Table 8 – Italian forecast-based assessment of foreign labour need

	2006	2007	2008	2009	Annual average change 2007-2009
(1) Forecasted employment rate (15-64) (DPEF/Min Eco Fin)	58,4%	59%	59,7%	60,3%	
(2) Forecasted number of overall employed population (Labour Force Survey) (DPEF/Min Eco Fin)	22.988.000	23.228.955	23.463.409	23.685.024	232.341
(3) Forecasted decline of working age population (excluding new foreign arrivals 15-64 y, which totalled 119.000) (ISTAT)	38.708.287	38.567.638	38.441.194	38.297.152	137.045
(4) Forecasted number of employed (15-64) excluding new foreign arrivals (DPEF/Min Eco Fin, ISTAT)	22.605.640	22.754.906	22.949.393	23.093.183	162.514
(5) Foreign labour need = total increase of employed (2)+ forecasted decline of working age population (3) – effects of employment increase of residents (4)					206.872

2) Business and household needs

Business and household needs are estimated based on different types of information. Regarding the former, figures are obtained from the latest edition of Excelsior (i.e. employers' perceived foreign labour needs). Whereas, data from latest regularisations are used to forecast the amount of foreign workers that would be requested by Italian families to cover their needs for domestic and care services.

Hence, in the period 2005-2007, business would express intentions to hire between 128.973 and 190.937 foreign workers. This is not an exact indicator of foreign labour needs, since it is just an indicator of hiring intentions of businesses. And these figures include Romanian and Bulgarian nationals, who are EU citizens and as such, enjoy differentiated migration treatment.

Given the Excelsior survey's upwards bias in estimating foreign labour needs, its estimates should be combined with timely information on unfilled vacancies. In the Italian case, this requires significant improvements in the national information registry of vacancies. Besides, merging and coordinating of local databases at national level is necessary to build up time series, comparable to that of Excelsior, that allow for forecasting.

For households' hiring intentions, the latest planning document considers information from the last regularisation scheme of 2002. On that occasion, 340.000 foreign workers in the domestic services sector were regularised. Taking this figure as a total for the four previous years, it corresponds to approximately 85.000 irregular hires of/needs for domestic workers by families per year for the period 1998-2002. For the following years, requests for entry presented in 2006 are used as a reference about families' foreign labour needs. Namely, in 2006, requests for work permits for household services totalled 224.092 - worth almost half of total non-seasonal work requests. Likewise, domestic work permits effectively released between 2003 and 2005 were around 26.000. Hence, transforming these figures into annual average terms, "revealed demand" for foreign domestic work has been around 62.500 individuals per year.

Retrospective information on regularisations (by nature, exceptional instruments for immigration management) is however not adequate to provide information labour migration needs in the household sector. Given Italy's ageing process, a substantial need of care workers is expected in coming years. Hence, foreign workers shall be increasingly essential to lessen the scarcity of domestic health and care services that respond adequately to the needs of the eldest. Likewise, increasing female participation shall continue to create demand for foreign workers for domestic and family care services. In terms of measurement, this requires taken into account societal trends (e.g. female activity and employment rates) and demographic indicators (e.g. people reaching retirement) should be also taken into consideration. Further, some information can also be gathered from migration archives. For instance, administrative information about households' applications for admission of foreign workers could be analysed. This requires some additional human and financial resources, as it would be necessary to further invest in information systems that are regularly updated and coordinated at a national level.

3) Retrospective information of hires from abroad and applications for regularisations

Other information used in the Italian case are actual hires and applications for regularisations during the previous period. From these figures, the labour demand for foreign workers is estimated by applying multi-annual averages, which should account of year effects and the impact of annual decrees of previous years. For instance, information for 2005-2006 shows an increase of non-seasonal work by 120%, from which is derived that annual levels of labour demand for non-seasonal foreign work ranged between 191.473 (min.) and 275.937 (max.). (See table below)

However, part of this demand is satisfied through other categories of foreign workers that do not fall into the annual decrees' ceilings, specifically:

1. EU workers, especially from new EU Member States (2004 and 2007 enlargements/ especially from Romania and Bulgaria. It is stated that migration from Romania may have already reached its maximum, and hence, inflows from this country may fall over the coming years).
2. asylum seekers already in Italy for more than 6 months
3. entries for family reunion
4. economic migrants exempted from annual ceilings for special reasons

Further, estimates also wish to take account of the outflows due to the return of foreigners to home countries. There are, however, no exact data for this and exits are approximated from cancellations from local administrative lists ('anagrafe').

Table 9 – Italian estimation of foreign labour need to establish quota

Elements to estimate demand for foreign labour	Foreign (Non-EU) Labour needs estimated by Regions, social parties, and associations in the field of immigration	(NA)
	Annual average hires of foreign workers projected by employers (industry and services), Excelsior survey results for 2005-2007. [It does not include demand for domestic workers by households]	Min. 128.923; Max. 190.927
	Annual average of non-EU permits + requests presented during 2003-2006 (calculated as number of permits released between 2003 and 2005 + requests in 2006)	138.000
	Average decline of population aged 15-64 in period 2007-2009 (absolute value on the basis of ISTAT demographic projections)	137.000
	Average decline of population aged 20-60 in period 2007-2009 (absolute value on the basis of ISTAT demographic projections)	195.000
	Annual average increase of total employment in Italy between 2007-2009 (DPEF/Ministry of Economy and Finance)	232.000
Modes of entry other than non-EU ceilings that respond to demand for foreign labour	Inflows from Romania and Bulgaria (EU countries as from 2007) (figure of reference used are non-seasonal entry requests in 2006)	128.000
	Inflows from new EU countries (those that joined EU in 2004) (figures of reference used are inflows in 2005 and during first seven months of 2006)	18.000+8.000
	Family reunification (figure of reference used are permits released for family reasons, which is used even if many of these corresponded to under 18)	28.000
	Total number of refugees with right to work (figure of reference is of 2005)	5.282

	Entries of workers for special reasons (art. 27 TU) (figure of reference is of 2004)	12.000
	Exits of foreign workers (figures can be obtained solely through exits of foreign workers registered in local administrative lists, ISTAT, 2005)	15.700
Source: Migration planning 2007-2009 based on data from institutional sources (Ministry of Internal Affairs, Ministry of Social Affairs, Ministry of Foreign Affairs, Unioncamere-Excelsior, ISFOL, ISTAT)		

In conclusion, three-year planning document is a reference for the establishment of general policy orientations and it is somehow useful to take stock of the immigration phenomenon on a regular basis. However, in the Italian context, such medium-term planning is not fully reflected in actual legal inflows allowed under the annual quotas. In actual terms, migration planning is determined on a year-to-year basis. In fact, Italian immigration policy is employer-driven and firms tend to plan their hires on an annual basis (or even less). It is noted that Italian authorities have proved incapable of adequately managing annual migration inflows, in view of persisting irregular immigration over the territory. The lack of both reliable sources of information and effective involvement of regional level bodies is a major factor that hinders the adequate labour migration planning. While a large variety of sources are used in the three-year planning document, comparability and level of disaggregation remain weak, given that differences in data collection methodologies are not duly accounted for. Besides, the lack of formal and comprehensive evaluation/monitoring systems of the migration management system prevent the three-year planning of being effectively adjusted to facilitate the establishment of annual quotas and allow for synergies with other policy areas that have longer implementation spells (integration policy, including education measures).

Summarising, main implication for the Russian Federation from this review of international indicators for labour shortage is that no single data source can meet all needs. Hence, users will need to relate statistics from different sources in order to make labour migration statistics more coherent and consistent in regard to concepts, definitions and units of measurement.

The three international experiences described confirm the importance of combining different sources of information, while taking due account of constraints linked to data availability and specific methodological aspects of each of them. Considering different measures of labour shortages is important, but so are then cross-checking and tracking measures over time to determine whether labour shortages actually exist. It has already been explained that just because employers report vacancies do not mean a shortage exists for a certain occupation. Trends in vacancy data need to be evaluated against other labour market evidence for that particular occupation. This is by no means an easy task. As pointed out by Poulain and Perrin (2001): "In all cases [of migration measurement], the statistical collection of data is usually a by-product of administrative data collection systems". In fact, concepts and data collection methods often do not correspond to measurement needs for labour migration policy-making. Therefore, it is important to carefully choose the source(s) of statistics concerning their strengths and limitations to develop a system of labour migration statistics that is both comprehensive and as statistically sound as possible. Thus, much of the difficulty will relate to problems of interpreting the statistical data, especially when measures from

different datasets often lead to different conclusions about labour market needs. Many of these difficulties are also due to weaknesses in the data. (Cohen, 1995)

Secondly, these three measurement experiences respond to the immigration policy goals in each of the countries. While the British indicators provide a more comprehensive approach to labour market estimation, the Spanish experience is an example of how the administrative archives on the labour market can be exploited for a quarterly monitoring of occupational shortages. On the other hand, the Italian case shows the relevance of taking into consideration not only shorter-term factors but also longer (or medium)-term aspects, such as demographic patterns and presence of migrant population, for a more effective management of foreign labour recruitment.

In fact, another aspect that it is important to recall is that the mere existence of a labour shortage does not automatically and necessarily imply a need for foreign workers. Therefore, it is important that indicators also take into account the causes of consequences of such labour shortages. Different policy responses, being labour migration one of the many, may be effective in different occasions (Boswell et al., 2004). It is then important to include indicators that specifically account for those situations in which a labour shortage is effectively, using the UK terminology, 'sensible to foreign labour'. Still, an additional determinant in this regard may be political factors, which, even if evidence confirms existence of foreign labour needs, may favour certain interventions, other than labour migration, because it is necessary to balance conflicting and competing migration concerns (e.g. social tensions, security issues). (World Migration Report, 2008, Chapter 11)

Summarising, some relevant suggestions from this international review relate to the critical areas that any set of indicators for foreign labour needs assessment should cover:

1. We cannot solely rely on the stated perceptions of employers, industry organisations and the like;
2. Evidence of employment search, such as vacancy & job-seekers registers, provides some indication that the potential skill shortage is external rather than internal;
3. Evolution of unemployment and employment rates provide further insights about labour market dynamics, especially if disaggregated at the occupational level;
4. Wage indicators, in addition to register data, should be used to help differentiate between skill shortages and recruitment difficulties;
5. Occupation specific register and wage data needs to be benchmarked against economy wide averages to help assess the extent that shortages are skill specific rather than simply reflecting economy wide labour scarcity.
6. Labour market position of current labour migrants also provide some indications about shortage
7. Demographic projections and prospective educational/skills profile of resident population give additional information on longer term patterns. For example, data on academic completions provide information on the supply of graduates by field of study and level of degree for any given year.

3. Assessment of main data sources in the Russian Federation

Bearing in mind that the RF labour migration system is meant to address labour shortages, the present section provides a description of main labour market data sources in the RF. The aim is to assess their potential use for the construction of indicators for foreign labour needs assessment. In the process, main features as well as limitations are highlighted.

Sources refer to labour market factors, as well as to migration and demographic patterns. Focus is given to systematic sources of data (timely updated, conducted regularly); and availability of data at sufficient level of detail (by occupation, at (sub)regional level). This is important to fully account for wide disparities across regions in terms of labour market structure and recent and prospective economic dynamics.

3.1. Data on vacancies and foreign needs recruitment

1. The main source of information for quota formation in the RF is the employers' applications. The administrative form requires the employer to provide, together with information about the firm, details about the job position, in terms of occupation, as well as pay and working conditions (e.g. type of accommodation, working hours). The employer is also required to specify the country of origin and skills level and previous experience. The form has to be filled one year in advance in order to enter into the quota allocation; albeit it is not binding (i.e. an employer who did not apply can still hire a foreigner once the quota has been established)¹⁶. Once filled it is submitted at regional level to the regional bodies in charge for labour migration management (i.e. in most of the regions it corresponds to the Employment Services-Rostrud). Once the datasets are built (collecting all applications and merging all data), they constitute the elementary piece of information in order to assess the total number of permits within the quota, as well as the allocation across regions. Information about the sector of activity reaches the 5-digits level of disaggregation, whereas occupation data can be broken down up to 4-digits detail. This level of detail is maintained up to the federal level, but, when the quota is distributed across regions, broader definitions of sector and occupation are typically adopted (albeit the level of detail varies from a year to another). This is done to account for some possible changes in labour needs during the period between the application and effective recruitment.

However, this source encounters a number of constraints. First, there are constraints linked to the capability of employers to assess real foreign labour needs, as mentioned earlier on. Second, there are limitations due to the administrative nature of the data. The information is collected one year ahead the actual recruitment, which means that short-term labour needs and cyclical/seasonal shortages may not be adequately controlled for. Also, the application is not binding. Overall, there are certain types of employers (small-

¹⁶ See Annex N. 1.

sized firms, households) and sectors of the economy which are less likely to (be able to) present all required documents.

Therefore, and as demonstrated by the last-two years' quotas, the employers' applications do not provide sufficient information about the need for foreign labour. Ultimately, any set of indicators relying mostly on this source shall systematically produce inconsistent estimates. This brings to consideration all other possible sources for generating complementary data.

2. Another relevant source of labour market dynamics is provided by Rostrud's administrative archive which relies on a network of 2445 local offices all over the country. Rostrud's register collects information about both supply (unemployed and job-seekers) and demand side (vacancies). Employers are required to provide a great level of detail about the job position¹⁷, which is mirrored in the form for job-seekers. Job seekers can apply to as many occupations and as many times they wish, provided the Employment services agree with their skills adequacy to those occupations or job positions.

However, coverage is not comprehensive enough, because many firms do not refer to the register for recruitment¹⁸. Also on the supply side there is an overrepresentation of certain categories of workers, which raises concerns about the representativeness of the datasets. Besides, there are differences in the capacity and coverage of Rostrud's offices in rural areas relative to urban areas. Consequently, the Rostrud archive for unemployed and jobseekers, systematically underestimates unemployment, relative to the official unemployment rate. Experts mention that the Register covers about one third of the labour market¹⁹. Only firms operating in the formal economy shall revert to the Employment services, mainly because register involves also tax inspection. The gap is significant, also by international standards. Besides, despite the forms and procedures for data collection are the same, there is still not full coordination/automation of the local employment services, which would ensure better matching in the labour market.

In terms of innovative efforts, the launch of an on-line Register "Jobs for All" represents a step ahead. The pilot stage started in January 2009. After decentralising employment services, it has become increasingly necessary to invest in improving coordination among regional Rostrud offices, which is deemed essential for fostering efficiency and transparency in the delivery of services. The website is divided in two blocks, one for unemployed and job-seekers, and one for employers. The advantage is that users can access to job vacancies/candidates at federal level. Before, the information was only merged at the regional level but since the end of the 1990s there has been an effort to adopt harmonised software and procedures. Information is updated every two

¹⁷ See Annex N. 2.

¹⁸ Employers are requested by law to register their vacancies. However, the legislation does not foresee sanctions for those who do not register. Usually, small-sized firms are less likely to publish their vacancies, whereas larger firms tend to do it, because they are more closely scrutinised by the administration.

¹⁹ Experts' meetings 26th-30th January 2009.

weeks, but once the project is fully implemented (as from April 2009) data shall be updated daily. Provided the extensive coverage of the on-line register is achieved, the data collected could be assessed for policy purposes, for instance, assessing labour market mismatches with a particular focus on young job-seekers. Nonetheless, access to micro data is left to the administration for privacy reasons, and external users can only access to statistical aggregates. It is also necessary that Rostrud manages also adequately involve private employment agencies in the system.

In view of all this, there is an overall underestimation of actual labour force needs when using Rostrud's data to cross-check the Employers Applications for Foreign Labour Recruitment in the quota setting process. If the quota is set below actual labour needs, together with administrative delays, there will be more pressure for employers to fill vacancies through irregular migrant workers.

3.2. Data on earnings, employment and the labour market

3. Much labour market information is obtained on the basis of the quarterly Labour Force Survey (LFS) conducted by Rosstat. While it is mostly used for measuring unemployment, it also collects information about skills and occupational status. The universe of reference for the sample construction is the Census 2002, while accounting for its annual updates. The sample includes around 70 thousand people aged between 15 and 72. It is representative on an annual basis at federal and regional levels, but it is not ensured at lower levels (sub-regional, local)²⁰. Information about economic activity follows the OKVED classification, which is harmonised with NACE rev.1 standards and it goes up to the 4-digits level of detail. Occupation is provided for the last place of employment and it is classified according to ISCO88 up to 4-digits of detail. The education level is recorded in line with official education system levels. However, there is some weakness as regards to people retiring, there is no sufficient information collected for this aspect, which is relevant for assessing replacement demand.

Nonetheless, the micro-data files remain a rich source of information in order to examine further in detail the structure and evolution of current workforce, including employed, unemployed²¹ and inactive. An idea would be to include migration-related questions in the questionnaire, such as place of birth, nationality, place of residence a year ago, which shall help analysis of the impact of migration. Recently, some adjustments have been foreseen in order to improve the timeliness of the data, since current economic downturn requires a closer follow-up of unemployment.

²⁰ Nonetheless, representative regional information might only be reliable if using data of the last quarter plus those for the three previous ones, because sufficiently large sample size is then reached (i.e. representativeness). However, further breakdowns cannot be made.

²¹ The LFS questionnaire asks whether the individual is registered at the Employment services. This allows for cross-checking the coverage of Rostrud's archives for unemployed and job-seekers.

4. Information about newly graduates (i.e. first-time labour market entrants) can be obtained from the Ministry of Education. This source of information provides details about the professional specialisation and qualifications of younger cohorts. However, a harmonised statistical codification linking the qualifications with corresponding occupations is missing. This complicates comparison of LFS data with information about education, which is relevant in order to assess longer term trends in skills profile of the domestic labour supply. The Ministry of Education, together with the Ministry of Foreign Affairs, keeps track of the numbers of foreign students. However, these archives are not coordinated. More reliable information is then obtained from FMS's data on visas for study purposes.
5. The Census is the most important source of data on the population. As such, it provides data for demographic projections, as well as information about the stock of migrants and about internal migration. The last census was conducted in 2002 and it included questions on the place of birth, citizenship, changes of residence since birth, and previous place of residence. There is a yearly update with some adjustments. Next Census (2010) is under-preparation and it shall include further details about migrant population currently residing in RF. Overall, the Census data have not sufficiently been exploited for policy analysis.
6. The Household Budget Survey (HBS) is conducted annually. HBS covers 49,000 households and is representative at the regional level. It has very detailed information on household income and consumption expenditures, as well about age, gender, education, and occupation of each member of the household. It also has information about expenditures and savings and by implication household income. Its methodology was streamlined in 1997 gaining in representativeness and focusing on poverty-measurement²². For sources of household income, a survey such as Russian Longitudinal Monitoring Survey (RLMS) proves useful, but it also has major limitations (see below).
7. Complementary, administrative datasets about taxes and social protection contributions or similar do not seem to be exploited. Information is collected but there is no linkage between the individual datasets. However, these are interesting datasets providing longitudinal series, which, if arranged and merged, keep track of the job mobility of the workforce. At micro level, it allows for analysis on the likelihood of workers of moving from informal to formal work, to advance in their career, to leave definitively the labour market (inactivity), etc.
8. Notification of contracts to the Ministry of Health and Social Development is compulsory. Contracts to migrant workers are also communicated to the FMS. This is the main source of information for legal CIS employed workers.

3.3. Data about the business sector

²² As a matter of fact, it has been the main source of information for the World Bank's poverty assessment report for the RF. (The World Bank, www.worldbank.org)

9. The Employers' survey by Rosstat is another rich source of demand-side information. Firms are requested to report information about their workforce, levels and distribution of earnings for employees, as well as about hiring and firing, and vacancies (and, recently, planned dismissals). Large-sized firms (with more than 100 workers) are requested to inform on a monthly basis, medium- and small-sized firms do so annually but on more sporadically, non compulsory basis. Hence, overall, there is significant under-representation of sectors and regions that may concentrate large numbers of smaller firms. Rosstat's vacancy data can only be broken down by region and economic sector, but not by occupation or skills level. Besides, information about job creation and job destruction is only asked on an annual basis. This represents a major limitation when interested in comparing these data to Rostrud's vacancy register. And additional questions cannot be added to the questionnaire due to legal constraints.

Nonetheless, Rosstat has also conducted a random survey on Employers' skill requirements. Employers are asked to specify labour needs by occupation and professional categories. A first pilot was carried out last year, and results will be released in April 2009. The initial project was meant to conduct this survey on a biannual basis. This could be a most relevant piece of information about labour demand. Yet, the current economic downturn raises some doubts about its continuity.

Another survey to employers by Rosstat concentrates on individual entrepreneurs and small-sized firms. It has been recently launched, and it should be carried out on an annual basis to a representative sample of employers. It provides information which can be cross-checked with LFS data on self-employed.

3.4. Data about migration

10. Migration statistics are mostly managed by the Federal Migration Services (FMS), which, since 2004, publish an annual summary report. Recently, migration cards have started to be taken into account for migration counting at aggregate levels. There is room for improvement on the basis of this information. Again, these are administrative data that need some adjustment in order to adequately respond to statistical criteria for measurement. Mainly, they keep track of the number of procedures, but not of the individuals. An individual may renew the permit annually; but each renewal is counted as he/she was entering for the very first time. Still, their main advantage is that they provide data for estimating migration stock and flows, as well as classifying by type of migration (i.e. labour, family reunification, study) and country of origin. This information is essential for examining the composition of current foreign population. Overall, as for many countries, official data underestimate the extent of migration flows in Russia.

Immigration-related registers managed by the Ministry of Interior/FMS are an essential source of information not only about international migration, but also about internal mobility flows of natives. Albeit internal mobility in the RF is particularly low, labour market policies which aim to improve the supply-demand matching may promote internal mobility especially among younger workers. In this sense, information about the composition of current internal movements is important. Additionally, unifying these registers in a single dataset can provide information about the migration stocks, through information about the work and residence permits. It can be then cross-checked against information of the LFS and the Census in order to reach more robust estimates about current migrant population.

Experts have pointed out the importance of changes introduced in the rules of migrant registration, which have clear implications on the statistical monitoring. Specifically, since 1996, international (and internal) migrants are requested to register in the police, where they are recorded by place of residence and place of temporary stay. Overall, statistics on the basis of these registers underestimate the actual amount of migrants. There is a significant stock of irregular migrants (both internal and external) who are not registered²³.

Despite these limitations, FMS data provide useful data for estimating the amount of migrants from visa-free countries who apply for work permits, which can be compared to totals for those who actually get them. Likewise, there is the possibility of cross-checking estimates for migrants from non visa-free countries on the basis of the visa issuance and registration of the work contract upon arrival. In general, the number of work permits exceeds the requests collected from employers. On the one hand, not all employers notify about new contracts to foreigners, albeit they are supposed to do so. On the other hand, migrant workers who wish to change occupation or region are required to apply for a new work permit. This does result in double counting for the same individuals. Though there is a number who may not apply for a new work permit and prefer to remain in an irregular situation, especially when it is a short-time job.

11. Remittances data are available through the Central Bank and banks, which monitors transactions carried out through existing systems of payments. There is growing interest on this source among the authorities, as it allows for deriving the average earnings' profile of migrants by country of origin (identified through the country of destination of remittances flows). Knowledge about migrants' income levels the earnings profile of migrants is useful when studying the overall impact of migration on RF economy, since it is then possible to calculate their contribution to GDP growth. Interestingly, the

²³ For instance, there are some inconsistencies between the residence and work permits for CIS workers. While the former may last for several years, the work permits needs to be renewed annually. Work permits renewals already are likely to represent a significant share of the annual quota. And, if they do not fulfil that years' quota requirements (occupation, region), they may not have their work permit renewed. This problem has been alleviated recently for residence permit holders – they are not a part of the annual quota.

irregular component of migration is also included in these estimates so far migrants are only required to present a passport in order to transfer money back home through formal channels²⁴.

3.5. Data about the macroeconomic and socio-demographic background

12. Economic and demographic projections can be also obtained from Rosstat, and are based on Census and LFS data.
13. Given the relevance of the informal economy in the RF as source of employment for both domestic and foreign workforce, Rosstat's regular studies on informality are a valuable source of information as to the relevance and composition of this phenomenon across regions. It is particularly useful as well to understand how significant the downwards bias of official statistics is. Informal employment is estimated with LFS data, and it is calculated on the basis of unregistered household production. Discrepancy measures between LFS data and Employers' survey data are used for estimating the size of the informal economy. Available figures allow for estimating the percentage of labour force in the informal economy, including the share of migrant workers employed in the informal economy. Information can be broken down by sectors of economic activity.
14. Other comprehensive macro information can also be gathered from the strategic policy programmes approved at Ministry level. There is not to date any strategic programme for migration.
15. Additional surveys by Rosstat:
 - a. Annual survey on Vocational Training for public service officials. It reviews training activities at all administration levels (federal, regional, local). Information is provided by gender, age, education, skill and occupation. The information is released on Rosstat's Labour Market Report.
 - b. Annual Survey on Industry and Transport sectors which contains labour market information to these specific sectors.
 - c. Annual Survey on Sciences, which contains information about research and development activities, innovation and use of advanced technologies.

3.6. Other interesting sources

²⁴ Still, it is important to assess how relevant are the costs of formal channels relative to informal couriers and other nonregistered means of transference, since if significant, there could be some deviation from formal to informal channels due to the impact of the crisis on migrants' earnings.

The following have been identified in relevant literature on the RF migration phenomenon. However, their main limitation for the purposes of migration planning is that they lack systematic continuity over time.

- a. CDHE Survey was conducted in 2005 by the Center for Demography and Human Ecology. While the sample was not nationally representative, it provided an advance regarding micro-economic data on migration in Russian regions allowing for cross-sectional analysis. However, it was only carried out once and it could not provide estimates for the stocks and flows of different categories of migrants. It depends on donors' financial support.
- b. The IISP (Independent Institute for Social Policy) provides an interesting and rich archive of sociological data. Mainly, its aim is that of granting with full access to researchers and academics to wide range of datasets. However, much depends on donors' financial support. The project was initiated in September 2000 with the Ford Foundation financial support. At present the archive houses about 500 studies conducted by leading Russian sociological institutes. The archive has its own budget and staff²⁵.
- c. The SMDR (Survey of Stratification and Migration Dynamics in Russia) is another interesting experience. It was coordinated by Prof. Theodore P. Gerber²⁶. The purpose of the study was to collect survey data on the employment/work histories, family structure histories, and residential mobility histories of Russian adults. The work histories cover the period 1985-2001, and include the information about each job held during that time period: occupation, how the job was found, employer type, industry, and size. In addition, the survey gathered information on current residence, occupation, other job characteristics, earnings, sources of household income, household ownership of consumer goods, basic demographic indicators, and attitude measures. The data were designed to be used for multivariate analysis of the factors influencing changes in employment status, job mobility of various types, changes in marital status, fertility, and residential mobility in Russia during that period. This source of information has been used in a number of academic articles. However, this was a one-time study, and the situation in the RF has changed substantially compared to that during the period of reference. Still, it provides useful methodological insights for future surveys.
- d. Job Atlas has been conducted in 2008 by the Ministry of Health and Social Development. The objective of this special survey has been that of determining the availability of skilled workforce and the factors that influence the labour supply. It has surveyed companies in different sectors over 56 regions. It has distributed around 5.000 questionnaires to

²⁵ http://www.socpol.ru/eng/archives/about_proj.shtml

²⁶ Gerber, Theodore P. (2001): "Survey of Stratification and Migration Dynamics in Russia, 1985-2001", [Computer file]; Moscow, Russia: Vserossiiskii Tsentri Izucheniia Obshchestvennogo Mneniia (VTsIOM) [producer], 2002; Inter-university Consortium for Political and Social Research [distributor]; (<http://www.icpsr.umich.edu/cocoon/ICPSR/STUDY/04206.xml>)

three types of firms (private, joint ventures, state-owned) and it has also included 11.000 interviews to representatives of key occupations, who have been asked about the opportunities for career development in their occupation, as well as the skills and qualifications that are required, and the expected income level, perceptions about socio-psychological elements of their occupation. However, there is no certainty about its periodicity, because it depends on availability of financial resources within the Ministry's budget. The results of this survey refer to the situation before economic turmoil which was reported in labour market statistics as from the late summer.

- e. The NOBUS (National Survey of Budget and Access to Social Services) already contains a number of questions on migration which allow for monitoring labour mobility. However, NOBUS would be a valuable source only if it were administered regularly. But its lack of popularity for policy-making/research has hindered its access to sustained financial support.
- f. The RLMS (Russian Longitudinal Monitoring Survey) is the only available-for-research and widely-analyzed longitudinal survey of a national household sample. The RMLS has less than 5,000 observations and is not representative of the population on the regional level. It was originally designed to measure the effects of Russian reforms on the health and economic and social well-being of households and individuals. Hence, it contains extensive information on individual and household sources of income: wages and profits from first, second, third jobs; pensions and unemployment benefits; profits and dividends from accumulated assets. Ideally, it could be augmented to include questions on migration history and the intentions of household members. However, its sample is not representative and it is not conducted systematically (it is not a panel, but a series of cross-sectional surveys).
- g. Border Services Data are a rich source of information to realise cross-checks against FMS datasets. It contains information about the stated reason for entry and can provide detailed information about flows by country of origin and by RF region of destination. However it will be necessary to account for possible biases in the data because certain borders are exempted from border control (e.g. Belarus) or certain entry points may hard to coordinate (e.g. trains).
- h. Another possible source would be a Register of Foreign Population which should be coordinated by the FMS. It should merge data from different bodies involved in migration management. For instance, there would be information from the Ministry of Interior concerning migration cards information, data on refugees and asylum seekers, as well as work permits and residence permits data. This information would then be complemented with information on crimes committed against foreigners and by foreigners; as well as visa and invitations statistics, customs data and information from the Tax authority, as well as Border service data. Then, it should be also determined how the information exchange and distribution would be implemented.

Table 10 - Main data sources in the RF

Source		Authority	Quality of data and methodology	
Vacancies and foreign needs recruitment	1	Employers' applications to foreign labour recruitment	Rostrud	Satisfactory, but underestimation.
	2	Vacancies & job-seekers register	Rostrud	Good detail and coordinated methodology, but major underestimation of vacancies and unemployment, disaggregation at regional/local level, levels of disaggregation for sectors is at 5 digit, and for occupations is at 4 digit
Earnings, employment and the labour market	3	Labour Force Survey	Rosstat	Good, quarterly
	4	Information about graduates	Ministry of Education	Good, but classification according to education system, No harmonized with labour market classifications (occupations); disaggregates by region
	5	Population Census	Rosstat	Satisfactory
	6	Household Budget Survey (HBS)	Rosstat	Satisfactory
	7	Information about tax and social security insurance	Ministry of Taxes	No information on methodology
	8	Notification of contracts	Ministry of Health and Social Development. FMS (for contracts to migrant workers)	Satisfactory, but not yet exploited
Business sector	9	Employers' surveys	Rosstat	Good
Migration	10a	Labour market situation of foreign workers	FMS	Good, main source used by authorities to estimate level of employment among legal CIS workers

	10b	Current statistics of migrants (based on registration procedure) – both foreign and internal flows	Ministry of Interior (FMS)/ Rosstat	Unsatisfactory, considerable underestimation
	10c	Data on work permits for foreign employees and Russian citizens employed abroad via Russian employment agencies	Ministry of Interior (FMS)	Unsatisfactory, substantial underestimation
	10d	Data on residence permits and permissions for temporary residence	Ministry of Interior (FMS)	Satisfactory, but only partial information on methodology
	10e	Migration cards statistics	Ministry of Interior (FMS)	Poor
	10f	Data on foreign students	Ministry of science and education; Ministry Foreign Affairs; FMS	Partially satisfactory, but no information on methodology; FMS & Min Foreign Affairs: visa for study purposes
	10g	Visas and invitations statistics	Ministry of foreign affairs; FMS	No information on methodology; FMS: for change or extension of visa
	11	Remittances	Central Bank and each of the 20 systems of payments (Commercial banks are preferred to MTOs, because passport is only documented requested; informal channels are also used)	Good
Macroeconomic and socio-demographic background	12	Economic and demographic projections	Rosstat	
	13	Informal Economy Survey	Rosstat	Good, like labour force survey
	14	Strategic policy programmes approved at Ministry level	Ministries	Good, but not harmonised cross-ministerial methodology (which places focus on labour shortages)
	15	Additional sources (Annual survey on Vocational Training for public service officials; Annual Survey on Industry and Transport sectors; Annual Survey on Sciences)	Rosstat	Good, focus on certain sectors
Other sources	16	Ad hoc surveys (e.g. CDHE, IISP, SMDR, RLMS, Job Atlas, NOBUS)	Various	Good, but not systematic.
	17	Border statistics	Federal security service (Federal Border Service)	No information on methodology, probably heterogeneous depending on the border check point
Source: elaborated by the Authors on the basis of Chudinovskikh, 2004				

Table 10 summarises the sources of information, while table 11 would indicate which should be potentially used for the development of indicators for measuring foreign labour needs.

Table 11 Main data sources in RF relevant to foreign labour needs assessment

Some key data sources to assessment of labour shortages	
Indication of shortage	Sources
High proportion of skill shortage vacancies as identified by employers	Employers' survey
Rapid growth in relative earnings in an occupation in the recent past	LFS, HBS
High earnings return to higher education	LFS
Price rises in product markets	
High or increasing vacancies in an occupation distinguished by levels, rate, duration and numbers of establishment affected	Administrative data, Employers' survey
Higher or increasing vacancy rate (V/E, V/U, V/Active)	Administrative data, LFS
Low unemployment rate among people previously in specific occupations	Administrative data, LFS
Evidence of skill supply and demand, including age profile and workforce and requirements, etc.	Complementary studies
Widespread overtime working or an increase in its prevalence; relative large number of hours worked in an occupation or an increase in average hours worked.	LFS
Widespread or earlier promotions	Complementary studies
Changes in staff turnover	LFS, HBS
Evidence of widespread outsourcing to other countries	Complementary studies
High or increased levels of training and training expenditure	LFS, Complementary studies
Increase in the attractiveness of overall employment packages for an occupation	Complementary studies
Reason for leaving last job/reason for looking for a new job.	LFS
High concentration of migrant LF in an occupation	LFS, Migration statistics
Source: MAC (2008) and authors' adjustments to the RF case.	

However, it is important to recall three main general limitations can be pinpointed from this brief overview and which need to be considered in the translating the proposed indicators (see next section) into practice:

- 1) There are constraints caused by the issue of **disaggregation**. It is important to confirm which is the level of disaggregation of the available source of data, and whether classifications of occupations and sectors have been harmonised across sources. It seems that in the RF most of the relevant official data are available only up to the 4 digit occupational level or sector. This is often not the level at which employers think about shortages. Besides, some RF experts mention that, already at that level, one should be cautious. The sample sizes in many cases are not sufficiently large to provide statistically reliable estimates at disaggregate levels. In

some cases, the sample sizes may be inadequate when cross-tabulation by variables may be attempted.

- 2) A second limitation refers to **time lags**. The labour market does not typically adjust instantaneously in response to a labour shortage. Additionally, there are delays between data collection and data release; and, ultimately, data can only be collected periodically. Besides, in the case of labour migration there are also administrative delays. For example, employers' applications are requested one year ahead of actual recruitment of requested foreign workers.
- 3) The **lack of counterfactual** may cause some further constraint. Provided migrant workers are to be recruited whenever no domestic labour force is available. In some sectors and occupations, it will prove difficult to assess the feasibility and costs of the alternatives to recruiting migrants (e.g. internal mobility, training & skills upgrading programmes) when responding to labour shortages.
- 4) Available data come from administrative sources or multipurpose surveys (LFS) which have specific purposes other than measurement of labour shortages. Hence, while they allow for identifying trends, they cannot distinguish the factors that explain a certain trend.

Despite of all the caveats, a set of indicators is developed in the next section in order to assess potential labour or skill shortages which employers' applications cannot capture. These indicators rely on regional and federal data on employment, earnings and unemployment in relation to occupation and/or sector of economic activity. Besides, labour migration statistics and longer-term demographic and educational patterns are also taken into account at the federal level. However, above-mentioned data limitations need to be addressed by adding complementary analysis and information for particular occupations, sectors or regions (i.e., sectoral studies and stakeholders' consultations).

4. Development of foreign labour needs' indicators for the Russian Federation

There are a number of premises to be stated before describing the set of indicators to assess foreign labour needs in RF.

First, as reviewed in the previous section, international attempts to identify labour shortages are based on different methods, and most approaches do not rely on a single indicator. Hence, our proposal combines a range of economic and labour market indicators. In the Russian case, in order to complement employers' applications (which indicate difficulties in filling jobs), we generally rely on additional labour market indicators, such as trends, at regional and federal levels, in employment and earnings, as well as the unemployment rate for a given occupation and sector of economic activity. Our choice of indicators is underpinned by the concept of shortage as an imbalance or mismatch between demand and supply. Therefore, given previously described limited data availability, the report chooses a set of cost-effective indicators which assumes neither changes to the migration legal framework in the RF nor changes in data collection systems and sources. Resource-effectiveness is also taken into account in the choice of the level of detail required. A reasonable compromise is to be reached between a sufficient level of disaggregation of the indicators and a non-excessive administrative burden for the calculation.

Second, it is accounted that diverse results may be obtained from different approaches which points to the need of accounting for data coverage limitations, as well for contextualising the data. In a subsequent section, recommendations are outlined as to improvement in data collection for the purpose of foreign labour needs assessment, and, thus, implications for the proposed set of indicators are also mentioned. In order to account for data coverage limitations, a series of cross-checks among selected indicators have been included. Some of the information on shortages may only be adequately ascertained on the basis of bottom-up information and knowledge of the labour market of the occupation and sectors in question. In this regard, complementary assessments in terms of sectoral studies and consultations to relevant stakeholders are recommended.

Third, the definition of the set of indicators is a conceptual exercise which has to ensure a linkage with immigration policy objectives and instruments, but also with actual statistical information. The criteria applied need to be consistent and transparent, which demands observable and measurable indicators. The latter creates information requirements for which no univocal solution exists. Despite theory and practice may suggest different criteria which may be effective to achieve the policy objectives, the choice and weighting of the selection criteria is ultimately a political decision. Besides, the effectiveness of such criteria can only be assessed *ex post*, on the basis of their actual contribution to the achievement of the objectives. Hence, this implies a continuous monitoring and adjustment of the set of criteria in response to relative success/failure over time. It is noted that the effectiveness of indicators is particularly challenged by temporary labour migration²⁷. Short-term labour shortages are explained in many

²⁷ It is recalled here the distinction between long-term and short-term labour shortages, which in turn are linked to two types of immigration: temporary and permanent immigration. Shorter-term needs respond to shortages in specific occupations or sectors of the economy due to, mainly, mismatches between labour demand and supply, which require the acquisition of qualifications and skills (the market equilibrium is not restored by an adjustment in wages). In such context, temporary migration may be needed to cover vacancies until the adjustment in the skills profile of the domestic labour supply has been accomplished. On the other hand, longer-term labour shortages have a permanent impact on the labour supply. For instance, demographic

occasions by the unpredictability of labour demand for which a timely identification is complicated. The fact that administrative processes may be relatively inflexible may further hamper the effectiveness of indicators of shortage. (Zimmermann et al., 2007)

And, fourth, the indicators have been conceived assuming normal labour market conditions. Hence, the context of economic hardship should not question the choice of indicators and their thresholds, because they should continue to be implemented once the economy recovers. This constraint needs to be taken in particular consideration if a pre-test of the set of indicators is performed in the mid of crisis, which would be certainly necessary for the definition of the thresholds. If such was the case, the thresholds would be downward biased and the adjustment would be certainly essential once economic growth resumes.

The remaining of the section is structured as follows. First, indicators are determined for the regional level. It mostly consists of a set of indicators that measures the existence of shortages combining employer-based information and labour market data. Second, federal level indicators are described for which longer term factors and nation-wide aspects are particularly relevant. Each of the indicators is defined by focusing on its role in assessing foreign labour needs, data sources are mentioned as well as cross-checks. Given that the actual distribution of each of the indicators is not known at this stage, thresholds cannot be defined. In fact, it is worth noting that any threshold for defining critical levels of foreign labours needs would be somewhat arbitrary, if not relative to the experience of the given country: typically one has to pool all observed data, then calculate the median value of them, and finally choose a threshold that is roughly proportional (for a given percentage, based on the specific shape of the distribution) to the median. In such a way we can be certain that we are identifying severe cases of labour market difficulties or distress (i.e. below the threshold), and we can also verify that our findings are generally robust to reasonable variations in these thresholds. Our policy implication follows closely from this procedure: using a single threshold for all countries to identify countries that need labour immigrants ignores the importance of specific policies, institutions and shocks. Country-specific thresholds reflecting policies, institutions and shocks are more appropriate.

Hence, the two-tier set of indicators is intended to complement the existing system of quota formation. Besides, the majority of indicators are expected to respond, to a greater or lesser extent, to the economic cycle. For instance, employer needs will tend to decrease whenever aggregate demand falls. Similarly, the supply of some immigrant labour may fall during an economic downturn. However, changes will not be ongoing across occupations and there may be other longstanding needs and shortages that transcend the economic cycle. This component shall be better captured at the upper, federal, level.

patterns leading to a fall in working age population, or changes in educational and professional preferences among domestic labour supply. If the labour market would be perfectly competitive, there would be an upwards correction for wages in occupations/skills in relatively short supply. Whereas, in the case labour markets are rigid, there is a role for permanent immigration policy, since migrants may be directed to those segments of the labour market which are not filled by natives (i.e. an immigration policy which attracts migrants with complementary skills profile to natives). (Zimmermann et al., 2007)

4.1. Indicators at regional level²⁸

As known, the RF system of quota formation hinges upon the information collected at regional level through employer's applications for foreign labour. In view to the data limitations linked to this source of information²⁹, indicators at the regional level should provide a direct cross-check to measurements of labour needs based on employers' applications.

In this regard, and based on international experience, the proposed set of indicators covers:

- labour demand factors,
- labour supply factors,
- labour market matching.

Bearing in mind international experience, the indicators include employer-based perceptions about shortage, indicators of imbalance based on administrative data, as well as local labour dynamics (e.g. volume-based indicators, like employment and unemployment rates). Additionally, we include indirect measurements which need also to be taken into account when assessing foreign labour needs, such as informal economy, and current labour migration. For each of the three labour market dimensions covered at the regional level, given data availability constraints, a number of cross-check indicators are included as correction factors.

The indicators focus on occupations for which difficulties to find candidates are encountered. Hence, in each region, the indicators should be calculated by occupations. The level of detail suggested at this stage would be the 4-digit level. Nonetheless, the final choice should be left to the Russian Federal Administration, who may assess the actual feasibility in terms of timing and financial and human resources required for the estimation process.

Labour demand indicators and corresponding corrections

The objective of these indicators is to collect evidence of the labour needs by occupation on the basis of job vacancies, and to indicate recruitment difficulties perceived by employers. Main sources of information are Rosstat Employers Surveys (for all firms and for SMEs) and Rostrud administrative archives.

This is a good indicator because employers' hiring difficulties for a certain occupation are signalling good employment prospects for such occupation. On the other hand, a high job vacancy rate may respond to many factors, which are not easy to discern. Firstly, a high job vacancy rate would reflect a shortage of some kinds of skills, which, especially if it relates to higher skills, hampers the competitiveness of firms. Secondly, high job vacancy rates can also indicate that in certain occupations or sectors the pay and working conditions are unsatisfactory, as there are not attractive enough for job-seekers. Thirdly, a high job vacancy rate may be higher in some regions, where there are tensions on the local

²⁸ The Russian Federation is divided into 83 subjects of the federation (*subyekty federatsii*), commonly known as the "regions" (*regiony*). 46 of these carry the official name oblast (in English also translated as "region"); 21 are republics (*respublika*); 4 are autonomous districts (*avtonomny okrug*); 9 are territories (*krai*); two – Moscow and St. Petersburg – are federal cities (*gorod federal'no znacheniya*), and one is an autonomous region (*avtonomnaya oblast*).

²⁹ See Kroschenko and Zibarev (2008).

labour markets and lack of intra-regional mobility. Lastly, job vacancy rates are also affected by the economic cycle. All these factors though should be accounted for at the federal level.

The first labour-demand indicator measures the relative scarcity of a certain occupation. It is defined as the percentage of vacancies for that occupation as to overall vacancies (for all occupations). Data is to be gathered from the Employers' survey.

The following indicator is aimed to highlight those occupations most likely to report labour shortages. The number of vacancies for a certain occupation is divided by hard-to-fill vacancies for all occupations. The latter are defined as vacancies difficult to fill as perceived by employers.

1. Percentage of vacancies/all vacancies; by occupations	Relative scarcity of a certain occupation (or in a certain sector) relative to overall vacancies (overall recruitment needs in all occupations/sectors).	Employers' survey - Rosstat
2. Percentage of vacancies/hard-to-fill vacancies; by occupations	Relative scarcity of a certain occupation (or in a certain sector) relative to overall hard-to-fill vacancies (defined).	Employers' survey - Rosstat

Provided Rosstat Employers' survey asks about difficulties to cover vacancies³⁰, the second indicator would measure difficulties to recruit as perceived by employers by occupation. It is noted here that additional indicators are necessary to assess the nature of these difficulties. Several can be the reasons that a vacancy may become hard to fill. It often relates to skills mismatch, but it can also involve aspects such as poor pay or work conditions, or, even, the establishment being based in a remote location.

Overall, a hard-to-fill vacancy (HtFV) may be more likely to respond to absolute shortage. In this regard, HtFV may be in relatively low skilled jobs suggesting that they can be potentially filled by most people. In other words, the skills required to fill the jobs are general, low level ones possessed by the majority of the working age population. Hard-to-fill vacancies arise in some instances as a consequence of pay and conditions being unable to attract staff of the calibre required. Typically these may be reported by employers with vacancies for unskilled/semi-skilled jobs where the tasks could be learnt by doing during induction training. Hard-to-fill vacancies for higher level occupations shall be more explained with respect to an absolute shortage of the skills required in the labour markets in which they attempted to recruit.

In the event that in the Russian Employers' survey HtFV are not directly surveyed. It shall be relevant to agree on an operational definition of HtFV so that the indicator can be nonetheless measured. It can be determined linked in terms of those occupation sfor which vacancies that remain unfilled for a certain period of time³¹.

Given that employers' perceptions usually overestimate labour demand, we include a cross-check indicator on the basis of Rostrud administrative data. The latter are most

³⁰ See section on recommendations for data collection improvement in this report.

³¹ A possible methodological improvement, as suggested in section 5, would be to include such a question in next waves of the Employers' survey by Rosstat in order to directly ask employers about their perceptions about hard-to-fill vacancies.

likely to underestimate actual labour demand needs, especially for higher-skilled and household employment (i.e. domestic and care services).

3. Index of vacancy fill rate: Number of job vacancies/Number of contracts.	The higher the more chances there are difficulties to cover labour demand needs with domestic workforce.	Register at the Employment Services-Rostrud
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Besides, given that the representativeness of SMEs in Rosstat's Employers survey is not sufficiently ensured, as regards to foreign labour needs assessment, we include two further cross-check indicators on the basis of the survey on SMEs conducted by the same body.

4. Percentage of vacancies/all vacancies in SMEs; by occupations	Relative scarcity of a certain occupation (or in a certain sector) relative to overall vacancies (overall recruitment needs in all occupations/sectors).	SMEs survey-Rosstat
5. Percentage of vacancies/hard-to-fill vacancies in SMEs; by occupations	Relative scarcity of a certain occupation (or in a certain sector) relative to overall hard-to-fill vacancies (defined).	SMEs survey-Rosstat

Labour supply indicators and corresponding corrections

On the labour supply side, we need to consider all sources of workforce available in the local labour market. On the one hand, rising levels of employment in an occupation would normally indicate increased demand for employees with those skills; although severe problems in skills shortages may be also found in the presence of declining employment. On the other hand, low or falling unemployment rates among members of the domestic workforce previously employed in those occupations may indicate there are shortages.

6. Activity: absolute values	High or increasing indicators increase the chances of foreign labour needs to meet labour demand.	LFS-Rosstat
7. Employment: absolute values and rate.		LFS-Rosstat
8. Unemployment: absolute values and rate.	Low or decreasing unemployment rate increases the chances of foreign labour needs to meet labour demand. [Especially if combined with high activity and employment]	LFS-Rosstat

In the RF context, information on unemployment within the LFS is not disaggregated by occupation. Disaggregation should however be considered in the future. Ideally, information about unemployed workers associated with an occupation gives an indication of the scope for increasing employment of domestic workers. If a shortage of labour was reported for an occupation where a considerable number of unemployed people were seeking work, employers could be making inadequate efforts to recruit or train domestic labour. Hence, it should

Given the significant share of RF labour force in informal employment, we include an indicator of absolute active population. It is a cross-check to assess the reliability of employment and unemployment as estimated by LFS for that region. Logically, the informality is diversely distributed across sectors and occupations, we account for this in the indirect measurements.

However, it should be noted that these indicators may also respond to changes not strictly associated with shortages. Therefore, we are reluctant to use unemployment alone as a direct indicator of shortage. In addition, even if changes in employment or staff turnover relate to labour shortages, causality could run in either direction. This, therefore, gives further justification for using a range of indicators to assess shortages from the labour supply side.

Therefore, a series of cross-checks with an additional source of information is foreseen as well here. First, official unemployment and registered unemployment are compared. Despite Rosstat LFS provides accurate estimates about main labour market variables, we also account for registered unemployment as measured by Rostrud. Such indicator shall provide some indication, albeit with some imprecision, about the dynamics of the formal labour market for a certain occupation in a region. Besides, such indicator provides also some cross-check about the quality of labour market needs test, which is requested to employers in order to obtain permission to recruit from abroad. Specifically, such indication can be easily gathered by comparing the differences between registered unemployment with official unemployment (LFS) for a certain occupation. Namely, the less difference between registered unemployment and official unemployment, the more precise may be labour market tests performed in the context of foreign labour recruitment.

9. Registered unemployment: absolute values and rate; by occupation.	Low or decreasing registered unemployment rate increases the chances of foreign labour needs to meet labour demand. The less difference between registered unemployment and total/official unemployment (LFS) the more precise may be labour market tests performed in the context of foreign labour recruitment.	Register at the Employment Services-Rostrud
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Second, from the labour supply side two further aspects need to be covered: existing migrant workforce and workers in the informal sector. Thus, we propose to include an indicator the percentage of informality as to total regional labour force. More detailed information about informality could be considered (e.g. main sectors) provided does not cause an excessive burden on bodies in charge of calculation of the indicators. In view of existing limitations in migration statistics at more disaggregate levels, the resident migrant workforce is considered at the federal level.

10. Informal economy estimate as % to GDP and % to LF	High level of informal economy is usually linked to increased irregular migrant workers, who may overstay. [It reduces the need for additional foreign workforce if adequate measures are adopted to regularise the situation of informal workers as a whole]	Special study on Informality (biannually) - Rosstat
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Labour market matching indicators

These indicators account for the interaction between labour demand and supply side. Obviously, evidence of mismatch between skill supply and demand may indicate there are shortages. Indicators proposed address the question of “How effective is the labour market in filling existing vacancies?”

The unemployment to vacancy ratio by occupation is used to measure of employer demands relative to potential labour supply. Generally, a high vacancy/unemployment

ratio within an occupation suggests that employers are facing difficulties in filling vacancies given the supply of workers available at local level. This may indicate a shortage of workers in terms of skills, experience or characteristics required.

The first indicator relies on Rosstat data to calculate the indicator of shortage. While the numerator relies on data from the Employers' survey, the denominator uses data from the Labour Force Survey (LFS). The indicator is not data-demanding: the components can be obtained from above indicators. The type of corrections for SMEs considered for labour demand indicators should be taken into account when relevant biases are reported.

11. Percentage of vacancies/unemployment.	Intensity as perceived by employers. The larger the ratio, the more indications towards a need for foreign labour.	Employers' Survey & LFS - Rosstat
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In order to further account for possible imprecision across occupations, once again, the indicator is then cross-checked against a second indicator based on Rostrud data. Rostrud data have a more limited coverage, it is thus important to assess which are the occupations for which more discrepancies are reported.

12. Percentage of vacancies/unemployment; by occupation.	Intensity as perceived by employers. The larger the ration, the more indications towards a need for foreign labour.	Register at the Employment Services-Rostrud
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If these indicators are already available in existing reports by Rosstat and/or Rostrud, it may be more cost-effective to use it. It is recalled that if the indicator is built as unemployment to vacancies, the interpretation in terms of shortage is as follows: the lower the ratio, the more indications towards a need of labour.

There is a limitation to be considered for this type of indicators. Specifically, the simple presence of unfilled vacancies relative to local labour supply is not does not necessarily indicate a shortage that needs to be addressed through market intervention. On the one hand, a large ratio may respond to high vacancies, which as mentioned above may respond to many factors. On the other hand, similar caveats affect the unemployment indicator used the denominator because it is a short-term indicator. To look beyond short-term indicators may be relevant in order to find whether structural trends go in hand with current labour market situation, since this will certainly affect the choice of policy interventions. Moreover, these ratios are also affected by the economic cycle. Therefore, it is essential to understand whether current tensions may respond to short-term imbalances (linked to the current economic situation) or rather correspond to longer term labour market tensions. Using current unemployment rates and job vacancy rates, without considering longer term indicators, may lead to over- (/under-) estimating imbalances. These issues are accounted for in the proposed indicators at federal level.

Additional factors at the regional level

Once the indicators by occupation have been obtained a correction should be included taking into account of the effectiveness of the process of foreign labour recruitment. In particular, information from Employers' Applications (EA) from the present and the previous year is used. The indicator compares the ratio of submitted applications to approved applications of the current year against the previous one. Since it is calculated by occupation it provides information about actual recruitment practices by employers

through the formal channel of foreign labour recruitment. When possible, it is useful to distinguish occupations facing a relatively more continued demand for foreign workers by employers over time, relative to recruitment responding to shorter-term needs. This is important in order to account for the share, and occupational and regional distribution, of work permits renewals year after year.

13. $\frac{\text{Number of EA submitted}_t / \text{Number of EA approved}_t}{\text{Number of EA submitted}_{t-1} / \text{Number of EA approved}_{t-1}}$; by occupation.	The higher the more chances there are actual difficulties to cover labour demand needs with domestic workforce.	Register at the Employment Services-Rostrud
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Besides, provided increased use of EAs is attained over time (i.e. improvement in the implementation process is assumed), EA may provide further information about certain labour demand sectors which are not adequately covered in official statistics, namely labour needs by households (for domestic services and care services).

Also, given that workers from visa-free countries may enter to the RF without a contract and search a job upon arrival, we include a further control for this specific category of migrant workers. This indicator compares share of CIS workers out of the overall employers' applications. In the numerator, notified contracts is preferred to EA submitted for CIS, because CIS workers enjoy of visa-free status and can search for a job upon arrival. This indicator estimates the regional and occupational distribution of CIS workers as to employers' requirements. And, hence, it provides evidence for a more effective determination of the quota for CIS workers, relative to the overall quota ceiling, as well as for its distribution across the RF regions.

14. Number of notified contracts with CIS workers/Number of EA approved, the denominator includes both CIS and non-CIS migrants; by occupation.	Effectiveness of the process. Given the special status for CIS workers, it is important to estimate the share of CIS workers out of the overall employers' applications. In the numerator, notified contracts is preferred to EA submitted for CIS, because CIS workers enjoy of visa-free status and can search for a job upon arrival.	Employers' applications & Rostrud's administrative data
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4.2. Indicators at federal level

Once regional indicators have been collected, they are analysed at the federal level complemented by an additional set of indicators that intends to capture structural factors and more long-term patterns which have nonetheless to be considered in the quota determination. Federal indicators are broken down by region in order to highlight regional disparities, which need to be accounted for in the subsequent distribution of the quota across regions. Looking beyond short-term regional indicators may be relevant in order to find whether structural trends go in hand with current labour market situation, since this will certainly affect the choice of policy interventions addressing labour shortages. In some occasions, the choice will be favouring foreign labour recruitment or/and investing in longer-term measures for skills-upgrading, depending on the skills-level of the occupation and the region socio-economic background.

A first group of three indicators intends to capture macroeconomic trends: GDP in general, and GDP of labour-intensive sectors and industries.

15. GDP by region.	Ministry of Economic Development or Industry
16. GDP of labour-intensive sectors and industries; by region.	Ministry of Economic Development or Industry

A second group focuses on demographic factors and is based on projections on the evolution of the domestic workforce by Rosstat. Given that data available do not yet allow for building a comprehensive quantitative model for labour market forecasting, the indicators proposed here allow for capturing main structural patterns for assessing future labour demand and supply at an aggregate level.

17. Projected employment rate (15-72)	Demographic/LF projections - Rosstat
18. Projected number of employed [A] 19. Projected decline of working age population (15-72) excluding foreigners [B] 20. Projected number of employed (15-72) excluding foreigners [C] (D) Foreign labour need = (A) + (B) - (C)	Demographic/LF projections - Rosstat

The projected figures as regards to labour force composition are based on labour force projections as performed by Rosstat. In the absence of projections, a proposed approach would be to use a weighted average for the last three years, with weights fixed as to the inverse of the distance in time.

When possible, information should be broken down by main working age groups and by gender, as well as by occupation, because many labour market flows are age and gender specific, as well as vary across occupations. Further information on the labour demand due to departing workers may be gathered from labour market outflows due to retirement, mortality, emigration, and inter-occupational mobility. From the household survey/population census data, it is usually possible to examine these aspects. This makes it possible to estimate specific rates of retirement and mortality for each occupational class.

A third group concentrates on migration statistics, in particular by measuring international and internal migrants by region. Information could also be broken-down by sector and occupation. This more detailed statistics shall provide further insights about the permanent migration relative to more seasonal or circular migration.

21. International migration (employment by sector and by occupation)	High concentration of migrant workforce in certain occupations and sectors provides information about shortage.	Federal Migration Service
22. Internal migration	Availability of domestic workforce from other regions may reduce the need for foreign labour recruitment.	Federal Migration Service

4.3. Final remarks

Apart from employers application and local administrative archives, surveys are typically very good sources of information. Obviously, this depends on the quality of sampling. Russia has multiple surveys that are run on a regular and continuing basis, many of

which meet the highest international standards of data collection. But all these surveys have their specific aims, which are not related to investigate the labour immigrants needs. The surveys are designed with their aims in mind. When the data are collected, they can be used for many other purposes, to which they may be more or less suited. But the difference between the original purposes of the surveys and the uses to which the data are put in policy-oriented analyses can not be underestimated, as it poses a number of problems. In the short run, there are various statistical issues associated with using data for “new” purposes (this caveat has to be referred to this exercise to develop foreign labour needs’ indicators based on existing information: par. 4), and in the longer run there is the question of how surveys can be redesigned to address the “new” analytical interest (that is the importance of reinforcing data collection and propose complementary sources of information: par. 5 and 6). As a very general consideration, an important limitation related to the usage of existing data for addressing the issue of labour immigrants needs is that surveys are usually designed to measure means, not dispersion, and good estimates of higher moments than means is the basic source of information for defining thresholds and measuring relative needs of labour immigrants. And if labour markets are not sufficiently well-developed and monitored, then that available information risks to give misleading signals on the real need of labour immigrants. That is to say that probably the most challenging problem in the effort to set a battery of indicators on labour immigrants needs is measurement validity, which refers to the extent to which a variable can measure what it intends to measure, due to both the lack of reliability of available data and the inappropriate usage of existing variables for concepts referred to immigrants needs (the problem of “concept stretching”).

Statistical analysis is useful during the implementation of this exercise: if one then find that two measures are highly correlated, the principle of parsimony as well as the need of criterion validity (the need of cross-checking) have to be both taken into account. Statistical analysis alone, however, cannot serve as a sufficient test for the validity of a measure: content validity, coverage, feasibility, time and resource consumption, redundancy and effectiveness (in terms of concrete improvement of information) are substantial criteria to be considered to assess the relevance of proposed indicators.

In any case, data availability and reliability problems are, as we have noted, never fully resolved, and one can not escape from them. This is something one must live with and come to appreciate. Often the analytical imagination is well beyond physical capacity to obtain valid data to measure the attributes we need in our quest for a general assessment of labour immigrants needs. If one understand this, and remain cautious in the analysis, data availability does not preclude the process of building a general body of knowledge, with a battery of coherent indicators, mutually reinforcing in terms of cross-checking and balancing their respective biases.

Given these premises, once the conceptual approach to the two-tier set of indicators is clear, and data are available, a series of practical, but crucial, choices have still to be made.

Graph. 12 – The map of indicators at regional level: biases, complementarity and correction factors



The map of proposed indicators at regional level gives us an immediate perception of the crucial need of check and balance among multiple indicators. In fact, the assumption to be tested is that on the basis of Russia available information there is a general tendency to provide a lower-bound estimation, which is likely to create substantial downward bias in the estimation of foreign labour need.

The introduction of complementary indicators with different expected bias as cross-check mechanisms referred to the same row (i.e. to answer the same type of question) as well as the presence of correction factors covering specific segments of the market (indicators 4, 5, 6 and 10) aim at controlling for such biases.

In some cases (1, 2, 7, 8, 11 and 12) the sign of expected bias is not clear, as it depends on the net effect of opposite biases: for example, indicator 1 is affected by the variance estimates for the labour force needs based on the sampling method (it is expected to overestimate the need of big firms, whereas micro, small and medium enterprises are likely to be underrepresented, so that their needs are underestimated).

In any case, estimating the reliability and bias of each indicator is a crucial work that needs to be addressed in the implementing phase.

It is interesting to mention that, compared to the majority of other countries, where employers' perceptions and applications tend to overestimate the need of foreign workers, in Russia data coming from the basic source of information for defining quota, that is employers' applications, are expected to be underestimated, too. Therefore, no risk of over-estimation seems to affect the list of proposed indicators, and a significant downward bias has to be properly controlled for.

Many of the quantitative indicators discussed in this report may necessitate using cut-off points or thresholds. For instance, at the regional level, indicators are broken down by occupation, and, thus, it may be useful for interpretative purposes to set cut-off points which indicate occupations more sensible to be filled with foreign labour.

As mentioned earlier on, the choice of threshold is inevitably linked to the shape of distribution of the data for a given indicator (in terms of dispersion around central

position, asymmetry and kurtosis). Hence, in the impossibility of defining in advance the thresholds in the present exercise, the methodological alternatives considered in the context of the UK experience are briefly introduced. (MAC, 2008)

A first method is to set the threshold at a given percentile (e.g. top 25 per cent or top 20 per cent). It takes into account of the relative distribution, for which the threshold hinges upon the distance of a value from the median relative to how far all the other values are from the median. On the one hand, this approach is clear and easily understandable. On the other hand, since it does not take into account the absolute distribution, and by definition, there will always be the same number of occupations (in percentage terms) suggested by an indicator to be in shortage. This is a main shortcoming because even if shortages would be addressed, and the distribution would be changed, we would still always have 25 per cent of occupations being presented as possible shortage occupations by a certain indicator.

Secondly, an alternative is to use the median³² plus 50 per cent of the median, which takes into account the absolute distribution. Hence, a key advantage is that it does not imply a fixed number of occupations in shortage. However, this comes at the expense of setting a cut-point which is sensitive to the absolute level of the median and hence does not consider the shape of the distribution. This ultimately could imply that two indicators with different medians but the same shaped distribution could lead to different occupations to be classified as in shortage.

A third alternative is to use the median plus a percentage of the standard deviation. Its main advantage it is that it takes into account both the relative and the absolute aspects of the distribution. However, it sets a very stringent cut-point, unless we use only a very small percentage of the standard deviation, for example 25 per cent. It is important hence to assess the shape of the distribution in order to set the percentage. In general, if an indicator would follow a normal distribution, no more than 16 per cent of observations would be expected to be greater than the mean or median + 1 standard deviation.

Each of these alternatives has its advantages and disadvantages and, hence, it is recalled that the actual choice is subject to the data and the distribution that the indicators present³³.

It has been repeatedly mentioned that there is no single, unambiguous indicator of shortage. Factors other than occupational shortages affect all the possible shortage indicators. This is why we propose to use a range of indicators. As we believe that each of our indicators partially represents shortage, we would expect there to be some correlation between the indicators. However, we also expect each of our indicators to be affected by other factors in different ways. Therefore, in a next stage, another practical preliminary

³² We use the European approach that calculates average value such that it is unaffected by outliers. Conversely, the US approach relies on the mean. The median of the distribution is not affected by outliers, while the mean is more influenced by changes at either end of the distribution. For example, shortages may lead just some firms in an occupation to pay more and this is more likely to be picked up by the change in mean. Therefore, by using both median and mean pay indicators we have an overall assessment of shortage as indicated by changes in pay. This is true for all the thresholds and quantitative criteria adopted all over the methodology.

³³ Only for illustrative purposes, the UK experience can be referred to. In fact, for the British set of indicators of shortage the median plus 50 percent is preferred. Only when the distribution is very skewed, the top 25 percent is applied (MAC, 2008). This proves how the choice of the thresholds is determined by the shape of the distribution and the characteristics of the data at hand.

check may be necessary in order to analyse correlations among the indicators on the basis of real data.

In sum, these data-related and methodological issues above emphasise the need to carefully examine any available evidence before setting an inappropriate threshold. Last but not least, on-going review of the methodological aspects of the proposed indicators is necessary. For instance, changes in data collection methods of underlying data sources require review of indicators in question.

5. Recommendations to reinforce data collection and implications for indicators

This section outlines a series of recommendations as regards the improvement of data collection for the purposes of labour migration planning in the RF. They range from low-cost options like increasing efforts in data availability and employers' awareness, opening up existing datasets for independent researchers and adding migration questions to existing surveys; to high-cost-high return options such as full-scale microeconomic surveys.

Relatively easy and cost-effective improvements

1) Improvements in employers' applications. There are already several awareness-raising campaigns in order to foster the participation of employers in the process. Given the major role of employers in the recruitment of foreign workers, it is important to insist in this aspect in a systematic and coordinated manner across region. It is necessary to involve the employers' associations and business/sector organisations, as well as investing in conducting such campaigns. Second, automation of data processing should be further reinforced. Now, there is the possibility of registering online the application, but there might be cross-regional/sectoral differences as regards to access to internet and technical skills among employers. Regional authorities, with the support of social stakeholders, should invest resources in addressing these issues, since a more developed electronic system allows for better management at federal level. For instance, cross-checking applications against subsequent registration of contracts and visa&permits issuances would be further facilitated.

2) Availability of on-line data series from the on-line register Rostrud ('Jobs for All'). The initiative of an electronic tool coordinating all Rostrud archives across the RF is appreciated and its measurement potential should then be fully exploited. For instance, estimates for vacancies and unemployment should be calculated monthly on the basis of three-month rolling averages, and made available, together with monthly estimates of total vacancies. Besides, analysis of quarterly series should be conducted by broad economic branches and by firm size, as well as by occupation. These series should also be published on a seasonally adjusted basis. Figures can be expressed, for example, in terms of inflows of new vacancies over a period or in terms of stock (i.e. number of unfilled vacancies on a certain date each month). Preferably, all this information could be automated and easily available for users. For instance, a tool can be introduced to allow to cross-tabulate variables. Users may be able to create tables for vacancies, or candidates, classified by duration, region, and occupation on a longitudinal way.

3) Improvement in coordination of occupational classifications across data sources. Continued efforts are necessary in order to ensure a better linkage of the existing occupational and skills classifications between educational statistics, including vocational training, and labour market sources. As more comparable quantitative information becomes available, more sophisticated indicators and, possibly, model-based estimations may be feasible to gain in accuracy in labour market needs measurement over a longer term horizon.

4) Additional questions in the Employers' Survey of Rosstat. As described in the previous section, calculation of the labour demand indicators requires that some aspects are adequately covered in the survey. Namely, establishments report whether they have any current vacancies and, hence, the suggestion would be to include an additional question in order to assess hard-to-fill vacancies. Specifically, for each of the job roles where a vacancy would be reported, employers would be then asked whether they perceive difficulties to fill it. Several can be the reasons that a vacancy may become hard to fill. It often relates to skills mismatch, but it can also involve aspects such as poor pay or work conditions, or, even, the establishment being based in a remote location. Then, thanks to this additional information, the set of indicators gains in precision about the nature of vacancies. For instance, vacancies that would be reported as being hard to fill due to applicants missing required skills, qualifications or experience may be defined as skill-shortage vacancies. And a new indicator could then be introduced in the demand side of the foreign labour needs assessment.

5) Additional migration-related questions in existing surveys, in particular the Labour Force Survey and the Household Budget Survey. This mainly involves the inclusion of questions which gather information about the labour situation of immigrants and their socioeconomic characteristics. In particular, four variables are of particular relevance for international migration. These are: nationality; country of birth, years of residence in the RF, country of residence one year before survey. The first element is essential for assessing the composition of migration population by nationality and birthplace and its evolution over time. The second one is crucial for differentiating between permanent and temporary migration. Information about transit migration countries along the RF borders may be obtained from the question about the country of resident one year before.

6) Improved measurement of migration. In line with the previous recommendation, data from surveys, census as well as administrative data from the FMS can be further reinforced based on cross-checks among their estimates. In general terms, a certain degree of coincidence among these sources is required, although absolute similarity cannot be expected. If these three statistical sources are compared, it is necessary to be aware of technical aspects for which figures will differ. Specifically, registers are expected to be providing higher estimates about flows than those from censuses and the household surveys, such as the LFS. In turn, the latter are expected to provide higher estimates than censuses. This mostly due to the fact that registers collect information on the basis of administrative procedures. The difference among the three sources will be greater the more administrative procedures are necessary over the period of time under consideration. Another factor to account for is that LFS and censuses measure flows on a retrospective basis, since they compare current place of residence with that of a previous date. Registers are made from information provided subject to administrative deadlines and contain, therefore, more timely information. Similarly, it is reasonable to think that the LFS is will capture a higher volume of migrants than censuses. This is because censuses cover a period of five or ten years, whereas the LFS asks the same question about the situation a year before. Moreover, with the census question, it is not possible to

account for more temporary or returning (or even circular) migrants, while the annual LFS better captures these possibilities. Obviously, when the census question covers an interval of only one year, the census and the LFS would be expected to produce closer results. Hence, LFS surveys may be useful whenever the administrative registers or censuses have no (or no sufficient or timely) information on migrants. Nonetheless, measuring this phenomenon solely through LFS data is reliable up to a certain point, mainly because of its typically small sample size for migrants (Clarke *et al* , 1998).

7) A Mutual Learning Programme of Migration Analysis could be envisaged with the support of the Ministry of Health and Social Development and Rosstat. Comprehensive analysis of the immigration phenomenon is a pre-requisite for a more effective labour migration policy. As proved by international experience, analysis on labour market needs and on impacts of migration by researchers have then resulted in increased awareness of the phenomenon among policy-makers and the population as a whole. In order to reinforce the experience and instruments for assessing foreign labour needs, mechanisms can be put in place, such as supporting the participation of and organisation by RF statisticians and academics in international symposia and workshops. It appears particularly interesting promoting research networks at RF federal level on the topics of migration statistics and labour migration. Many of these initiatives shall foster the exchange of know-how and experiences among experts in different RF locations. This is a way of exploiting in an advantageous way the research challenges posed by diverging migration and labour dynamics at local level. Getting to know how counterparts address specific issues may promote innovative methodologies. Logically, the success of such efforts is reliant on improved access to data to researchers (see below). Nonetheless, joint efforts by researchers and policy-makers in labour migration analysis shall prove useful for adequately monitoring the indicators' capacity to capture changes in labour markets, demography and other areas.

More costly solutions to be considered in a medium-term perspective

1) An Inter-ministerial body composed by labour economist and migration experts that coordinate the data collection and calculation of the indicators. Following the recent UK experience (MAC, Migration Advisory Committee), an independent and one-stop structure would ensure evidence-based, transparency and efficiency in the RF procedure, ensuring that the indicators estimates are interpreted in line with clear and coherent policy objectives, targets and priorities as to labour migration management. It would also facilitate the monitoring of the adequacy of indicators and the implementation of corresponding adjustments.

2) Access to official micro data to the academic and research world. This can be potentially crucial for reinforcing research on migration in the Russian Federation, which indirectly also will contribute to enrich the quality of data collection. While free access to individual-level data is not currently allowed by Russian legislation for privacy purposes, the authorities should consider investing in constructing random samples of anonymous individual data which can be accessed by academia and experts. This certainly would enhance the overall understanding of the number and composition of foreign residents. It would foster further dialogue between the academics and policy-makers. Without microeconomic data collection it is impossible to evaluate the impact and potentials of migration on the domestic labour market, to understand changes in migrants' skills profiles, to analyse the implications of temporary and circular migration in comparison with longer term migration. Provided that micro data are reliable and based on

harmonised measurements and methodologies, microeconomic analyses can provide with relatively more useful insights than aggregate data. For example, on the basis of micro data, permanent migration can be distinguished from temporary migration. Using only aggregate data would make any analysis imprecise due to the interaction between external and internal migration.

3) New migration-specific sources of statistical data. First, an Immigrant survey could be carried out in Russia on the basis of a representative sample of newly-registered internal migrants, permanent or temporary. Several countries (e.g. US; Spain) have made efforts in this regard, especially in the event of sudden and significant inflows in a short lapse of time which cannot be adequately captured by official statistics. Not only allow for a better understanding of recent international and internal migration, but also for identifying which adjustments should potentially be introduced in the existing survey methodologies, if migration proves to have caused major changes in the underlying population structure on which existing sampling designs are built. Second, an international survey involving major sending countries could also be foreseen. Another crucial component of understanding migration in Russia is an extension of the data collection efforts to the major sending countries, such as China and CIS countries. Again, such efforts should take into account both temporary and permanent migrants, a requisite that involves obvious methodological challenges. In particular, potential international surveys could include representative samples of immigrants in the host country and population in a sending country. In this regard, international experiences on multi-situational surveys of migrant communities can provide significant references for developing an initiative of this type.

6. Recommendations on additional sources of information on foreign labour needs

Apart from indicators-based assessment, further exploration is necessary of shifts in labour market and skills needs in specific sectors and occupations using qualitative methods. Specifically, bottom-up evidence from sectoral studies and stakeholders' consultations can provide a deeper understanding of the dynamics linked to a specific sector or regional/local area.

A first recommendation is to reinforce the role of tripartite consultations with social partners at regional and federal levels in labour migration planning and management. Effective involvement of social partners is important, especially at the regional level, because social partners can provide further and specialised insights which cannot be captured by indicators and other quantitative methods. Actually, increased involvement of employers and trade unions at regional and federal level in the planning stages can subsequently facilitate a more effective implementation.

A second recommendation is to conduct a series of sector-specific expert reports on the micro-level determinants of employer demand for immigrant labour and the alternatives to immigrant labour. Sectors can be selected as sensitive to foreign workforce recruitment on the basis of certain criteria. For instance, when concentration of foreign labour force grows at a high rate; or when high vacancy rates, and other indicators of shortage indicate a tension, but some other indicators remain inconclusive. Then, the very same methodology has to be applied to each of them. Specifically, the EU experience in this regard provides an interesting framework for developing such exercises in the Russian Federation (it has been described in section 2 of this report and). It is recalled that they are

conducted upon the drivers of the future evolution of the sector in question, in order to pinpoint structural factors which lead to recruitment difficulties. Another interesting aspect from the EU method is that results of these studies are submitted to a panel of experts in that sector. The panel is composed of experts from the industry, social partners, academics and experts in education and training. They are supposed to reach consensus about the conclusions and recommendations. Hence, a consultation to relevant stakeholders in the sector should also be included in the Russian case. Besides, once all sectoral studies have been completed, a study could examine cross-cutting aspects which will reveal linkages and complementarities across sectors.

7. Conclusions

The identification of labour shortages sensible to foreign labour recruitment is a complex issue which requires accounting for a wide array of factors both in the short and long term. Over the short term, the economic growth, sectoral composition and the dynamics of labour demand and labour supply, and internal mobility should be considered. Over the longer term, demographic patterns and the evolution of skills profiles and the advance of technological change need to be considered. Additionally, tensions in the local social systems and political factors enter into play.

From a methodological point of view, other elements need to also be accounted for. Specifically, the quantity and quality of data, the resource and time available, as well as the specific interests of those involved in the process of policy-making. All these factors are to be considered in the definition of a methodology for measuring foreign labour needs in any country. In turn, this complexity implies that designs cannot be defined a priori. Nonetheless, indications of what constitutes useful methodological approaches are certainly useful.

The present report has addressed this issue for the RF. International experience has been reviewed with the aim of identifying valuable precedents and challenges in different European realities (i.e., UK, Italy, and Spain). The report has also assessed statistical sources in the RF in order to identify the available and reliable data for each of the dimensions of interest for a methodology to estimate foreign labour needs. Assuming no change in statistical sources and in the legislation framework, the report has then proposed a set of 22 indicators covering the regional and federal levels and the different aspects of the labour market and the migration phenomenon that need to be accounted for in the determination of foreign labour needs. Particular attention has been placed in proposing a cost-effective solution. Data limitations have been taken into account and a series of correction factors and cross-checks have been included.

Several indicators would require the definition of thresholds, which cannot be carried out without the availability of actual data. Once the operational phase of the methodology development enters into place, the choice of the thresholds will be linked to the distribution of the data for each of the indicators. This is particularly relevant also considering that the differences between the original purposes of the surveys and the uses for which the data are put in such policy-oriented exercise cannot be underestimated. Given that there is no single, unambiguous indicator of shortage, the set of indicators are meant to be complementary. Each of them partially represent shortage, since they are affected by different factors in diverse ways. Hence, the operational stage should also pay attention to correlations among the indicators.

A series of recommendations have also been outlined as to reinforce data collection. On the one hand there are relatively easy and cost-effective improvements, such as some modifications in the employers' applications and adding questions in existing surveys. On the other hand, other initiatives have been proposed with a medium term perspective. For instance, an Inter-ministerial body is proposed such that provides independent and evidence-based support to the policy-making process. Also, research on migration should be facilitated since it will reinforce awareness about the phenomenon and enrich the policy debate.

Bottom-up evidence is another type of information that should be promoted as complementary to the proposed set of indicators. In particular, tripartite consultations at the regional and federal levels would improve the planning process as well as the implementation. A series of sector-specific reports should also be prepared in order to examine further in detail micro-determinants of employer demand for foreign labour. Sectors should be selected under certain criteria. For instance, those more sensitive to foreign labour and there were some indicators point to some tension but some other remain inconclusive. Besides, such qualitative evidence shall provide insights for adjustment and streamlining of the set of indicators.

The current economic and financial crisis is rippling out into all economic and social sectors. Migration and the management of foreign labour are not immune to the effects, but they are not uniquely positioned. The bailout of the financial sector and the economic recession have reduced prospects for increased immigration inflows in Russia in the near term, whereas the impact on the long term, with pressures coming from different directions, including the importance of psychological and emotional stress and the risk of fragmentation of social cohesion that can lead to more complicated crisis exit strategy, has to be adequately assessed.

Over the short term, and as the job market weakens, a lower number of admissions might be foreseen given a downward effect on pull factors. On the other hand, push factors inducing migration inflows to Russia from the neighbouring countries might increase. Inherent tension between these factors may grow. This places further need in setting realistic goals for legal labour immigration which is based on an understanding on the real dynamics of the labour market and migration over the long run. This longer term perspective is particularly necessary in the RF as migration should be addressed as a permanent and structural feature of the society and the effects of demographic ageing shall increasingly be noticed in the labour market and in the economy as a whole. Many of the labour shortages built up over the last years can be expected to remain despite the dramatic economic downturn. Therefore, the RF methodology for measuring foreign labour needs should be equally effective both in times of economic hardship and of economic growth.

Beyond the scope of the present report, there are a number of issues in the international migration debate of relevance for the RF case. The administrative resources for the management of labour migration should be streamlined and reinforced to increase efficiency in the implementation of labour migration policy so that the processing of admissions is not excessively lengthy relative to local labour market needs. Given the decentralised nature of certain procedures in the RF, more efforts of coordination among the different bodies are required. At the federal level it is also important to ensure that all aspects of the labour migration phenomenon are sufficiently taken into account in the policy design and implementation.

Besides, the RF immigration policy framework seems to address labour migration as a temporary phenomenon. There is a particular focus on admission and control of inflows while the integration dimension might gain relevance as many migrants eventually decide to settle down³⁴. As some researchers have concluded, “there is nothing more permanent than temporary labour immigration” (Martin, 2001). This might pose challenges to labour market management as well since, as the European experience shows, passive or restrictive approaches to integration may result in labour market disadvantage for foreign workers which increases their risk of unemployment and social exclusion.

Moreover, as the RF faces the prospects of rapid ageing population, the international migration may represent an important potential for reacting in the long-run to the labour shortages which will occur across the skills spectrum. Today the RF immigration policy is mainly focused on the need of the low-level skills, but labour shortages are likely to occur in the mid-level and high-level skills as well. Thus, a more integrated approach, including attention across sending and recipient countries in the region to vocational and secondary levels of education as well as to the improvement of education achievements, is needed to face the structural changes in the long-run.

This issue relates to the circularity of certain migration flows. Discussions at the policy and academic level about circular migration flows have gained relevance lately, especially in the event of increased return flows linked to job losses due to economic downturn. In the RF, it might be relevant to explore the nature of these flows and assess its linkages to management of foreign labour through better coordination with major sending areas. A major challenge ahead is that of ensuring an adequate matching between vacancies and foreign workers. It is important not only to measure which is the nature of labour shortages across the RF labour market but also to ensure that these are filled with workers with the appropriate skill levels. Beyond quantifying the foreign labour needs, it is necessary to reinforce coordination with RF representation offices and cooperation with authorities in sending countries. In this regard, the issues of portability of social protection and of introducing trans-national financial and insurance schemes will surely be interesting new terrains for the future migration policies at the regional level.

³⁴ In most cases, temporary immigration can be an implicit selection process where the timeline corresponds to the long term integration into the host country by the means of visa extensions and renewals.

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Annex

Annex 1. Employer Application Form for Recruitment of Foreign Labour

Attachment N 1
to the Ministry of Health and Social Development
Order from 17 September 2007 N 603

Application from Employers, Service consumers, including foreign citizens, those registered as individual entrepreneurs, on labor force demand in order to replace (in fill) vacant and newly created pots by foreign workers for 2 _____ year

Name of Employer, or Service consumer _____
Juridical address of Employer, or Service consumer _____
Actual address of Employer, or Service consumer _____
N of registration within the Joint State List of Juridical persons (Joint State List of individual entrepreneurs) _____
Taxpayer Identification Number of Employer, or Service consumer _____

		1		
SORT OF ECONOMICAL ACTIVITY IN ACCORDANCE WITH CLASIFICATOR		2		
LIST OF PROFESSIONS AND POSTS, WHICH ARE FORSEEN FOR BRING IN		3		
CODE OF PROFESSION OR POST ACCORDING TO CLASIFICATOR		4		
NUMBER OF FOREIGN EMPLOYEES WHO WOULD BE EMPLOYED WITHIN THIS POST, PROFESSION (PEOPLE)		5		
Number of employees as for the 1 of January of the current year (people)	TOTAL	6		
	INCLUDING FOREING WORKERS	7		
	FL (FROM 7)WHO WILL CONTINUE WORKING IN HE COMING YEAR ACCORDING TO THE PREVIOUSLY ISSUED LC	8		
Additional	Need in workers (people)	9		
		10		
		11		
COUNTRY OF ORIGIN FOR LABOR MIGRANTS		12		
COUNTRY CODE ACCORDING TO CLASIFICATOR		13		
Conditions of employment of foreign labor force	Time of FW employment (month)		14	
	WAGE (ROUBLES)		15	
	Housing	NO	16	
		HOSTEL	17	
		RENT	18	
		OTHER KIND OF HOUSING	19	
	Medical support	OBLIGATORY MEDICAL INSURANCE (PEOPLE)		20
		VOLUNTARY MI (PEOPLE)		21

	Number of Foreign workers those who have (people)	Working experience	UP TO 1 YEAR	22	
			FROM 1 TO 3 YEARS	23	
			FROM 3 OT 5 YEARS	24	
			MORE THEN 5 YERAS	25	
	Education	Secondary education	26		
		Elementary vocational education	27		
		Secondary professional	28		
		Higher education	29		
Employers application to the State authorities responsible for employment of population	Date of application		30		
	Number of announced vacant places for the professions, posts where FL planned to be employed		31		
Reasons why FLF should be employed	Development of new technologies		32		
	Creation of joint enterprises		33		
	Absence of NLF in the region		34		
	Absence of NLF in other region of the RF		35		
	Planes for training (retraining) of own staff for the announced professions, posts		36		

Annex 2. Rostrud Vacancies Register Form

Attachment
To the Administrative order of the
Federal Service on Labor and Employment
on providing State Services for citizens those who are seeking job
and employers who are looking for employees

Information on workers in demand, vacancies

Name of the Juridical Person/ Individual Entrepreneur

Juridical Address

Address of Individual Entrepreneur/Natural Person

Address (actual)

Contact information

Full Name of employer representative

Transportation (sort of transport, name of the stop)

Organizational-legal form of entity

Form of proprietorship: state, municipal, private, public,

Sort of economic activity in accordance to the classificatory

Taxpayer Identification Number/ Individual Taxpayer Identification Number

Social guarantees for employees

Placement of information on vacancies at the vacancy data base (underline what's necessary):

- On the territorial level
- On inter-territorial level
- On federal level thru mass media sources
- Through Internet resources, involved in service providing

Name of profession (occupation) post	Qualification	Number of employees required	kind of work	Wage (income)	routine of work			Professional qualification requirements, education, work experience, other requirements	Additional requirements to the candidate	Additional social guarantees provided for employee
			Permanent, temporary, overlap, evening service, out-work		Normal routine, irregular working hours, flexible, reducing working hours, working in shifts, shuttle	From	To			
1	2	3	4	5	6	7	8	9	10	11