Abstract
The utility and adequacy of skills forecasts to support the work developed in career guidance and counselling and careers education is discussed. To do so the quality of underlying survey data is analysed and career learning theory is used to discuss their potential role in developing career management skills of individuals. Conclusions indicate that forecasts utility is increased by combining distinct sources of data in career services provision and by widening the range for speculative utilisation of data. Examples of successful integration of forecasts in practice oriented career learning activities are provided.

Keywords: Career guidance, Careers Education, Forecasts, Skills forecasts, Career learning, Labour market information.

Introduction
Skills forecasts have become an increasingly popular part of the data that feeds career information. Their production is widely encouraged in policy environments and large amounts of resources are employed in this activity. In what concerns the support to individual career management, particularly through
career guidance and career education activities at schools, it is not entirely clear how useful these tools are. In this article we will discuss the necessary conditions for skills forecast utility in career development support and their possible alternatives and complements. To address this issue we will explore to separate questions: a) are forecasts reliable, detailed, timely and with enough foresight to constitute the basis for useful career information? b) are forecasts adequate to support the career leaning activities involved in career guidance and career education?

1. Forecasts and their quality

Existing reviews of national and regional forecasting mechanisms (e.g. Vaid, 2015; Wilson 2001, 2004; Wong, 2004) have identified many of the most important aspects which define the reliability, potential and limitations of existing methods used to anticipate the demand for skills. Wong (2004) provides a useful typology of these methods into 4 clusters: time series projections; bottom up approaches based coefficients of commodity to labour demand; top down models; and market signalling approaches. Each one of these methodologies is closely related to the type of data used to generate the forecast.

Time series projections are arguably the simplest type of forecasting analysis that can be used, consisting essentially on the analysis of trends, bearing in mind the past behaviour of variables. Currently, most of these analysis would rely on a moderately sofisticated statistical approach for univariate analysis, such as producing an ARIMA type model (or Box-Jenkins as frequently mentioned in economic literature). In this as in the case of top down methods, as we will see ahead, employment is the variable normally analysed, if possible broken down into sectors and occupations. The most fundamental reason is that this is the most widely available variable in national statistical systems. The relative simplicity and low cost of implementation of this method makes it an interesting option for countries that have not yet established a quantitative forecasting system or lack the resources to launch large surveys which can supply the data necessary to feed more complex methodologies. The fact that the analysis is restricted to trends, provides a limited vision of the future, which essentially assumes that productive and occupational structures will remain on the same track. For this reason, this type of forecasts is only recommended for the short term.

Bottom up approaches based on coefficients are relatively easy to implement, as long as sufficient information exist on the regular functioning of activities.
Essentially, this method relies on the assumption that each service or production will require the same level of labour per unit of expenditure or product. Final labour demand can then be obtained by multiplying the obtained ratio by estimated expenditure or demand for products/services. While adequate for small scale analysis and evaluation of projects, this method proves to be limited to provide forecasts for large scale, complex environments, in which gathering of necessary information would either be resource intensive or reductive. Furthermore, constant updates of the base data would be necessary to guarantee the validity of the multipliers, so to reflect changes in technology, consumption, institutional context, among others.

Top down approaches are, currently, a trend in policy making, essentially due to the accuracy and wide coverage they allegedly sport. These models generally take a macroeconomic approach, linking changes in production in each sector to occupational changes. They may have significant differences in the way they accommodate the effects of technological change and the level of occupational and geographical detail then can provide. The simplest way to generate this type of forecast is to assume a fixed technology and to link labour productivity in a sector with its occupational structure. Once the level of output is estimated for that sector, calculating a future demand for an occupation is a simple matter. Top down approaches can be complexified, by including interrelation between sectors and by modelling the influence of demographic variable or technological change. Time series modelling is increasingly used to derive occupational demand in the last stage.

We must, at this point, note the most important limitations of the most widespread approach to forecasting. As mentioned before, as in simple analysis of trends, the reference variable is employment level. Employment is neither demand for labour nor a direct indicator of skills. Employment refers to current stocks of labour and its projection indicates the likely change in its level, approaching the expansion or retraction of total demand. Generally employment can be broken down by sector and occupation and by regions (generally equivalent to NUT 2).

The ideal information for both policy and guidance would require a high degree of granularity, reflecting to the extent possible, current and future vacancies in local labour markets. In most EU countries this information simply does not exist. Surveys on employment by establishment tend to be limited and with a low level of primary sampling units per local territorial unit i.e. few enterprises/establishments are surveyed a local level. This raises issues...
concerning the consistency of the estimates for local markets, which are the most relevant units when it comes to provide career guidance. This type of survey is also frequently subjected to modifications in methodology, which raises the additional issue of generating breaks in time series, which makes time series modelling a difficult task. Furthermore access to local breakdowns of this data might hit confidentiality limitations.

Generally, to make projections on occupations, household surveys such as population Census or, most commonly, the Labour Force Survey (LFS) are used instead. Censuses data tends to be less used, due to their low frequency. LFS data as some advantages, such as the fact that it measures new job starts and employed per occupation and qualification level, which is a proxy of actual qualifications of employed (rather than simply the required qualifications ). LFS further allows for intra EU comparisons, due to its harmonised nature. While improving occupational detail, the LFS is still limited in terms of the geographical detail and may differ from national accounts employment statistics (which may include other sources, such as business surveys, employment registers, social security registers, population census). In recent times LFS based forecasts have started to model both replacement and expansion demand, proving a picture of trends in terms of not only occupations in expansion, but also occupations which might be stable or diminishing, but still provide plenty of employment opportunities due to retirement or activity change of workers.

The strongest limitation of skills forecasts is, arguably, the impossibility of disaggregated forecasts without undergoing a costly process of increasing the size of employment surveys. Intelligence based on large scale surveys also tends not to be timely – it is not uncommon that the forecast is based on data which is two years old, raising questions about the validity of the projections. In addition, the time series available to model occupational demand tend to be short, not providing an ideal basis for the forecasting exercise. One other important limitation is that the baseline scenarios which underlie the analysis also tend to have quite strong assumptions regarding stable local employment patterns and sector performance levels. In a way, they prescribe a projective exercise based on relatively narrow visions of the future, with no account for plausible shifts in driving forces such as energetic technologies, regulations, work practices or consumer preferences.

Finally, we can also consider signalling approaches to forecasting, which essentially attempt to gather labour market signals regarding future job opportunities and skills needs. Information on wages per occupation,
employers’ preferences, relative success of training/education courses or advertised vacancies can provide valuable information on short term labour market behaviour. Although these approaches can be used on their own, particularly when there are reduced resources to gather large amounts of data, they work better as complement to traditional quantitative forecasts.

Studies which follow-up graduates in the labour market are a clear example of this type of approach. They can provide information on the time until the first job is obtained (queueing) as well as wage and responsibility level obtained per educational/training area. One other popular type of study surveys opinions of employers and experts on labour market developments. One major advantage of this type of work is that it allows for the gathering of contextual information at sector and local level, providing insight on significant niches and the effects of technological changes over occupations. Due to its inherent subjectivity, this type of approach requires highly structured techniques for consultation, such as the Delphi method (Dalkey, 1969). Information gathered in this way can also be used to build alternative scenarios on the evolution of sector level labour markets.

Information on advertised vacancies can also be viewed as a direct indicators of skills needs. With the development of more intelligent web technologies, automatic scooping of information regarding vacancies advertised online became possible. In markets where vacancies are mostly advertised online, as is the case of Canada, this provides obvious access to quality information. It must be noted, nevertheless, that this data may be biased and not very representative in many contexts. Administrative vacancy data from the public employment services can also be used, but it equally tends to be biased and not representative of the labour market, with a large share of low qualified and less stable jobs.

One further question that tends to be raised concerning all types of forecast is how far can they see i.e. are there reliable long term forecasts? Most approaches are not adequate for medium and long term forecasting and the only one which advertises long term reliability is the top down approach. Nevertheless, given the conservatism of its assumptions and timeliness issues, its long term validity can be challenged. As we will see ahead, the key to achieving higher quality visions of the future tends to be the combination of techniques to draw more complex and comprehensive scenarios. But before we will gain some insight on how these tools can integrate-guidance processes.
2. Forecasts in career development

One of the reasons that can be easily invoked to develop forecasts is that they inform citizens about successful career pathways and that people can use this information to improve their decisions concerning their training and education. This idea raises, of course, many issues regarding delivery modes of the information, user capacity and quite simply the adequacy of the information. Starting with the later, the information that end users need, such as students, parents and job searchers are qualification requirements, availability of vacancies and pay prospects per occupation. They also require this information in a way that reflects up to date data on local labour markets. Local labour markets can be defined (Vaid, 2015) as geographical areas in which interactions between the demand for and supply of labour occur in a regular basis and are relatively self-contained in terms of commuting flows. This means that, in many cases, we are referring to sub-regional units, roughly correspondent to NUT III level in the European nomenclature of territorial units. As mentioned before, most data used in forecasts rarely ever allows for detailed sector specific occupational information at that geographical level. Data on work requirements and work conditions also tends to be limited.

Secondly, forecasts may be used to supply self-help services with information about the future of professions. This raises two issues: the friendliness of the information provided and the ability of people to access and use the available information. Websites or other media used to present the data must provide clear, transparent data in easy to use formats. Quality labour market intelligence supplied in self-help services also requires a back office by professional career guidance practitioners, who must not only produce the career support tools but also maintain them. Furthermore, the effectiveness of these services is highly expanded by direct support by a practitioner. A review of several representative meta-analysis of LMI provided with and without the intervention of a practitioner (Savard & Michaud, 2005) showed that the effect of the information in career development tends to be neglectable without the intervention of a professional.

Career development can be easily understood as a learning process which empowers individuals to make reflexive, informed decisions. The initial conception of this process (Watts 1977; Law and Watts, 1977), defined it as careers education, which would be a series of planned experiences designed to facilitate the development of self-awareness, work opportunities, decision making skills and skills to support transitions such as job search and self-presentation. These compose the well established DOTS model, which arguably is the most influential theory on the work leading to frameworks of
career management skills. The DOTS model can be associated with measurable learning goals and expected outcomes, which are made part of an educational process, as frequently happens.

It is fairly easy to situate the utility of labour market information, especially future looking one, in the DOTS framework. It has the potential to help identify work opportunities, and to the extent the information exists, to help discern the evolution of work contexts and conditions. Within the activities developed by career guidance and counselling it is also relatively easy to conceive that forecasts may be used as part of information sessions, in provision of advice and selectively mobilised within counselling dialogues. The integration of this, like other types of information, in career development learning deliberately works towards helping people deal with progressively more complex career scenarios and make reflexive, informed choices.

A more recent extension of the DOTS framework (Law, 1996) allows to take this process into consideration more carefully. In it the career learning process is broken down into four major capacities:

- Sensing, which corresponds to gathering information and assembling relevant sequences;
- Sifting (or sorting), which consists of making comparisons and using concepts;
- Focusing, which consists in dealing with distinct point of view and forming one’s view;
- Understanding, which consists in developing explanations and anticipating consequences.

Importantly, as career decisions are more important, with more complex, ramified and durable consequences, the relative importance of these capacities changes. Basic activities will only require basic capacities, such as sensing career related information and sift it into personally recognisable patterns that can support action. More complex activities require that a person can focus on the available materials more intently and can also understand it, being able to conceive of the consequences of her actions in distinct scenarios. When unsupported and transmitted with inadequate media, labour market information can generate misconceptions and be sifted into personal stereotypes of professions, training routes, among others.

The extended DOTS is a particularly interesting framework due to its ecumenical combination of theoretical influences in career development. It acknowledges the importance of gathering and exploring information, without
naivety in its assumptions. The process of gathering percepts, ordering them into sequences, associating a narrative to events and things and generating a map of reality are considered. Primitive formation of constructs and their influence over durable conceptions of what work and careers are (such as gender roles) are taken into account. It points to relatively early interventions to expand initial formation of career constructs and recommends targeted remedial work for adults, to address the effects of stereotyping over personal career related classifications.

It also draws attention to the social process, highlighting the influence of others over the formation of personal perspectives and how cultural and emotional attachments determine many of people's orientations and attitudes. Importantly, the theory analyses the process of choice and how transformations in personal perspectives can occur. It also clearly highlights the role of personal crisis in establishing higher level ideas and internal processes regarding career choice. In other words it stresses that career guidance and counselling prepare people to challenge their assumptions about themselves and the „world of work”, interpret new knowledge and speculate about their future in a critical way.

Not going into the full detail of the theory, which would go beyond the scope of the current article, what is in sum depicted is a relatively well detailed description of how career reflexivity emerges and a comment on how curricular activities, guidance and counselling play a role in this process. The policy and practice implications are considerable, as well as the impact over the usage of forward looking labour market information. Firstly, since sensing and sifting should be supported from early stages, it makes sense that there some sort of work since primary school, presenting a wide range of professions, letting children discover about work and helping them organise that information. Forecasts and work context information should be combined and filtered into these activities affecting the selection of occupations and noting their evolving nature, which will naturally clarify perceptions about what professionals do and where they do it.

Secondly, when in a school context, career learning can be linked to curricular contents of subjects, expanding foundation work into a more reflexive frame, where practical activities can be integrated in school work. This requires that the information can usefully characterise the changing role of occupations in the construction of knowledge, society and the economy, as for example the introduction of green skills. Again contextual information and complexity come into play, largely exceeding mere trends in the growth of occupations. Thirdly,
teenagers will already be able to systematically work on all capacities, with the support of trained professionals (counsellors, tutors) addressing even negative emotional responses to areas of work or specific occupations. This same principle of systematic revision can be used for remedial work addressing the troublesome career constructs. For adult guidance, the career learning perspective suggests an individual based diagnostic approach, in which a tailored work of systematic revision of all capacities still applies. For higher level processes in which confronting opinions and exploring different personal and socioeconomic scenarios becomes important, forward looking information should be able to address the speculative nature of career learning and choice.

3. Consequences for the integration of forecasts in guidance and career education

In short, labour market information and intelligence produced with the specific purpose of improving career choice needs to be able to support career learning activities, from foundation to higher complexity learning. The information also needs to be usable by the professionals who support career learning processes. In a first moment this requires that professionals engaged in guidance and careers education can identify useful materials and information sources and combine them adequately to support career learning activities. For example, information on evolution of demand for occupations and updated information on work contexts could be combined to generate clarification on interesting and unexpected work opportunities in the near future (see examples ahead).

This implies that these professionals must have adequate (initial and continuing) training in the use of diverse types of labour market information to improve the outcomes of the activities developed. It also implies that they can use quality tools for this purpose such as updated job profiles with information on work context, friendly labour market synthesis with indications on retraction, expansion, and substitution demand.

More fundamentally, in what regards our core discussion, it means that forecasts cannot be faced as a standalone tool and can hardly be used as self-help device for end consumers. As we mentioned before, individual ability to access and combine the diverse sources of intelligence in a way that creates the necessary insight to make informed and reflexive decisions is, to say the least, uneven across individuals. While trained professionals can help people in this process, the necessary information to critically reflect about career futures exceeds the scope of most skills forecasts. Skills forecasts do not tend to support simulations of the future and they also tend to sacrifice context for the sake of consistency.
Since people make their decisions in a contextualised fashion, with local orientation, their reflection mostly feeds on intelligence on evolution of occupations in local firms, the corresponding requirements to access them and wage expectations. The promotion of higher level career learning is also facilitated by intelligence that can generate plausible scenarios under conditions of uncertainty, regarding the future of local sectors, transportations or even the local availability of social support structures. In terms of the approaches mentioned earlier in the text, the most adequate would be to combine top-down approaches with labour market signalling approaches that can increase both contextual information and generate alternative scenarios for local labour markets. Information on actual vacancies available locally and corresponding work and pay conditions must be part of the bundle, even if only through informal consultation of experts and local enterprises. Analysis of online vacancies can also provide an important complement.

It must be also considered that other types of data analysis can be used to generate better contextual information. Characterisation of local labour markets and local patterns of employability are important undertakings which potentially produce much useful information regarding mobility or local relevance of skills and qualifications. Quality intelligence can also be produced on other issues such as gender and ethnic segregation in workplaces, or employability relative to these factors. This requires, nevertheless, that resources are committed to surveys which gather data that allows for modelling of regional complexity, such as multilevel modelling. The didactic power of simulations should also not be neglected. To the extent the discussion and development of personal horizons is supported by structured speculation, research based computational simulations can also prove to be useful, inexpensive solutions to enable realistic non-linear and lateral thinking in career learning.

4. Interesting practices

In this section we briefly illustrate possibilities of integration between forecasting data and career learning activities with two national/regional cases.

a) Het Beroepenhuis, Belgium – foundational career learning with clever usage forward looking information

In this first case, we have a good example of how information on evolving skills needs can be integrated in career learning at an early stage. This non-profit organisation develops an activity aimed at opening up career perspectives for students 11 to 14 years old, with a strong emphasis on addressing
stereotypical and erroneous notions about occupations and activities. It does so by familiarising them with less known (vocational and technical) professions, developing self-knowledge (discovering talents and interests). Forecasting information is integrated by defining the focus of activities, the current and likely future labour market bottlenecks. LMI is produced and presented by a specialised team, who integrates information from the occupational profiles provided by sector federations.

The core activity is the guided visit which provides as much as possible personal interaction. The first session provides a short presentation about the world of work. The second session consists in a guided visit to the occupation exhibition which is designed to be interactive and experience oriented. It ends with a group discussion in which children are encouraged debate their aspirations and talents. Participants are also encouraged to check what they learned about themselves. The third session is a sector workshop where students can try different occupations within one sector. The workshop ends with a group conversation aimed at allowing students to share their experiences and which summarises the key points of the workshop. A LMI database and didactic materials are available to support school activities.

This case provides a vivid example of successful integration of current and forward looking skills information in a foundational set of career learning activities. The information is used to define the focus of the activity and to address early career constructs and existing stereotypes, which may have a strong influence over future decisions. This case makes essentially usage of signals provided by the industry and commerce councils, which express the views of employers. While this is qualitative information with variable quality and subjected to bias, the information provides rich indications and reflects actual work realities. Complementarity with a top down approach would likely increase reliability and accuracy of priority setting.

b) Berufsinformationszentrum der Wiener Wirtschaft (BiWi) and BerufsInfoZentren (BIZ), Austria – complementarity in integration of forward looking information

The Austrian career information centres, the BerufsInfoZentren (BIZ), provide guidance, particularly to job seekers, making use of the public employment service (AMS) skills barometer. The AMS-skills barometer provides extensive information regarding short to medium term needs in terms of occupations and qualifications. It is a user friendly tool that serves several types of users,
including guidance practitioners and end users. The information can be consulted at regional level (up to 600 occupations), with information about current vacancies and trends, provided through synthetic easy to read fiches, produced by a simple website navigation system. The database incorporates information from the national employers’ survey, AMS data on vacancies, analysis of job adverts, skills forecasts, sector representatives and experts consultations, as well as research elements taken from PhD and Master’s thesis. The high quality and detail of the barometer, make it a current reference in labour market information.

In the region of Vienna, for the younger cohorts, the AMS barometer works in complementarity with BiWi, the Career Information Centre of the Viennese Economy. The emphasis of this service is clarification of interests, strengths and weaknesses while making accompanied exploration of information about activities, occupations and work contexts. This achieved via several types of “orientation checks” performed in the context of counselling dialogues or with accompanied question and answer automated tests. Creative sessions are also developed with students, parents and teachers to deconstruct stereotypes and address misconceptions about activities and occupations. Active professionals and sector representatives are engaged in these sessions and make use of multimedia tools to present and clarify aspects of their work. Several types of work tasters (up to 15 days) are also made available to students. Differently from the barometer, the practical and contextual aspects are at the centre of these activities.

BiWi strongly supports teachers and schools in providing career guidance. It promotes class visits aimed at generating career reflection and supporting vocational choice (particularly for aspiring apprentices) in close cooperation with the school teachers of each class, who also accompany the students during the visit. BiWi also organises dedicated parents’ evenings either in school or in the premises of the centre. During parents’ evenings, BiWi career counsellors discuss with parents their role in their children’s career choice and provide them with an overview of possible learning pathways and the current situation of the labour market. Parent-teacher conferences are promoted at the premises of BiWi with the objective of presenting the comprehensive career guidance and information approach of the centre.

**Conclusions**

The growing investment in skills forecasts must be done rationally and with a clear conscience of their utility and limitations. Top down approaches are
frequently preferred due to their accuracy, long term prospect and potential use in policy discourse. They are nevertheless not always the best tools to support career development services, since they have generally a low degree of granularity, which limits their utility as a service tool to address the needs of locally based clients. An increase in the quality of the data is costly and may prove unfeasible for many countries.

Their role in carer learning activities, developed in employment services and schools, which empower the decisions of learners and workers can be limited. Choosing the adequate combination of fit-for purpose tools is essential to enhance the usefulness of forecasts. Forecast information necessarily needs to be presented in a friendly way immersed in tools which are adequate for career learning activities in curricular and non curricular contexts.

Career learning leading to more reflexive career decisions, necessarily requires the integration of forecast information in a context which allows for structured exploration of information, addressing personal misconceptions and expanding critical reasoning. Combination of occupational survey data with labour marketing signalling data, such expert consultations, sector councils reports, vacancy advertisement data, is highly advisable. It allows for the creation of nexus of local information which are appropriate to discuss personal representations and expectations.

Comprehensive self-help tools can be created on that basis, but avoiding the naďve belief that they will, on their own, promote the development of informed career decisions or of the career management skills of learners and workers. Career learning needs diagnostics and ensuing tailored intervention are the best guarantee of success. As a rule of thumb, self-help services should be integrated with professional careers support.

Given the speculative nature of career learning, especially at higher levels, production of scenarios or simulations of local and regional labour markets can prove of great utility. Combination of top-down forecasts with qualitative scenarios based on highly structured consultations and solid contextual information are a likely ideal combination. Other techniques such as multilevel modelling of regional labour markets should also be used, to better characterise employability of skills, address needs of specific user groups and support mobility decisions. This would nevertheless require distinct survey designs. The two cases analysed show potential pathways to develop complementarity and integration of distinct sources of information and services in balanced
and useful careers services. The examples of Belgium and particularly BiWi in Austria are revealing and clearly indicate that serious work towards empowering citizens to be good career decision-makers does not infer from simple availability of data about the future. People require adequate skill development and professional support, adjusted to their needs. In a time where the agenda for skills development is high in national and European policy, it is important that it is well understood that at the interface between education and the labour market there is not a chimera – there is the work that guidance and careers education can perform to reduce the gap between the ones who can interpret labour market signals and the ones who cannot.

REFERENCES


**Inspirație didactică pentru o învățare autentică – sugestii de aplicare a noilor programe de cls. a III-a**

Institutul de Științe ale Educației a dezvoltat în cadrul unui proiect de cercetare aflat în derulare un set de sugestii de activități de învățare în sprijinul profesorilor care aplică noile programe de clasa a III-a.

Aceste activități îi invită la un spațiu de inspirație, creativitate și inovare în proiectarea unor demersuri didactice ce stimulează achiziția competențelor descrise în noul curriculum școlar pentru învățământul primar. Sugestiiile didactice propuse stau sub semnul principiului centrării pe elev, pe nevoile acestuia și pe formarea de noi nevoi în era tehnologiilor mobile.

Exemplele de activități de învățare sunt ușor de aplicat de către orice profesor la clasă și vizează toate disciplinele din noul curriculum de clasa a III-a, cu excepția limbilor și literaturilor materno, a religiei și a dezvoltării personale. În decursul acestui an, vor fi finalizate și sugestii de activitate de învățare pentru aplicarea programelor școlare de clasa a IV-a.

Toate exemplele de activități de învățare pentru clasa a III-a pot fi descarcate la http://programe.ise.ro/Actuale/Noutati.aspx