

Beyond skill mismatch. Why there are so many unfilled vacancies and simultaneously high unemployment rates?

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Abstract

The traditional analysis of unfilled vacancies is grounded primarily in the interpretation of the Beveridge curve and mainly in the explanation of skills mismatch. However, it is easily verified that this is insufficient. In this text we try to collect, based on the available literature, a number of variables that can consolidate the comprehension of this phenomenon. We try to build a model that discriminates these explanatory variables (administrative issues, vacancy features, labour market and job seeker characteristics) in order to provide users and decision makers a set of decision-making aids, based on evidence criteria, to set reliable employment and training policies and not on political-ideological fluctuations.

Keywords: skill mismatch, variables, unfilled vacancies, unemployment.

Resumo

A tradicional análise das ofertas de emprego não preenchidas consubstancia-se sobretudo na interpretação da curva de Beveridge e especialmente na explicação feudatária do desajuste de competências. Contudo, é facilmente verificável que tal é insuficiente. Neste texto tentamos coligir, com base na literatura disponível, um conjunto de variáveis que podem alicerçar a compreensão deste fenómeno. Tentamos construir um modelo que discrimine essas variáveis explicativas (questões administrativas, características da vaga de emprego, mercado de trabalho e características individuais), no sentido de fornecer aos utilizadores e decisores um conjunto de auxiliares deliberativos, que consubstanciem políticas de emprego e formação, confiáveis e baseadas em evidências e não em flutuações de circunstancialismos político-ideológicos.

Palavras-chave: desajuste de competências, variáveis, ofertas de emprego não satisfeitas, desemprego.

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Introduction

Nowadays Europe is facing a slow recovering from a major economic recession. The importance of matching employer seekers skills and/or qualifications and available vacancies achieved prominence with rising unemployment and growing difficulties for people to entering the labour market. This reality arise a question: why there are simultaneously many job vacancies and increasing unemployment rates and even so the vacancies are not filled? Is the skill mismatch the key feature to enlightening the fact that a vacancy is not filled for long time?

Usually the literature dealing with unemployment and vacancies (or job openings) presents the skill mismatch as the key variable to explain the unfilled vacancies (also called unmet demand). Many studies, using the Beveridge Curve, try to represent in a graph the negative relationship between unemployment and job vacancies. In this framework the inefficient labour markets are due to mismatches between available jobs and the unemployed labour force. The position on the curve can point out the existing status of the economy in the business cycle.

The validity of this analysis is unquestionable. However, is it enough to explain all the unfilled vacancies?

Through the literature review we try to build a draft model that contains the variables that affect the matching and leads to unfilled vacancies. The correct and deeply knowledge of this variables allows to public and private policy makers to take evidence based decisions in order to help to streamline this social inconvenient and overcome inequalities.

1. Theoretical Framework and Studies

The polisemyc meaning of skills (Duarte, Ceitil & Santos, 2015) and qualifications (Bergan, 2007) needs to be clarified along this paper. So, we will refer in the text, to the definition of qualifications proposed

by the Council of Europe (1997) also accepted by the Bologna Process. This means that we refer to a degree, diploma or other certificate, attesting the successful completion of a programme or course. In other words, qualification refers to the formal acquisition of a set of knowledge, abilities and competences. In this framework, a skill will be the “exercise” (or put in practice) of a given qualification.

Moreover the meaning of skills mismatches also needs a definition. We will use along this text the concepts of CEDEFOP (2015a). According this Centre, a mismatch is a situation where companies, occupations, locations or groups with different levels of education/skill diverge over time in the unemployment-to-vacancies ratio. A skill mismatch is a situation where arises a (qualitative) discrepancy between the qualifications and skills that individuals possess and the skills that are required by the labour market. The meaning of recruitment/ vacancy bottleneck: is a situation where a vacancy (posted in a recent time period) is hard to fill by employers. In other words, the job vacancies are the stock of unfilled job openings for which companies are actively trying to recruit new workers. Within this concept there is also the Eurostat (2011) definition of a job vacancy: is a paid post that is newly created, unoccupied, or about to become vacant for which the employer is taking active and further steps to find a suitable candidate from outside the enterprise and intends to fill either immediately or within a specific period of time. Finally, related with the concept of unemployment rate we use in this text the definition adopted by Eurostat (2011): the unemployment rate is the number of people unemployed as a percentage of the labour force.

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There are several explanations and interpretations to analyse the reason(s) why there are unfilled vacancies while the labour market has also high unemployment rates. As European Commission (2014a) reported: the relationship between recruitment difficulties and shortage of skills are extremely complex. Let's see how!

The Beveridge Curve is the most common statistical and graphic tool to detect and explain labour market mismatches, but it stands

insufficient to conclude about skill mismatches (European Commission, 2015). This macro explanation set aside some other dimensions of skill mismatches (European Commission, 2015): specific skills shortages, skills mismatch on-the-job and basic and digital skills deficits. The specific skills shortages arises when broad qualification levels hide a wide diversity of training fields and specific skills outlines, which cannot be considered substitutes for each other, creating specific shortages in particular fields (that cannot be covered by oversupply in other areas). The skills mismatch on-the-job take place when employees perform jobs for which they are under or over-skilled. Basic and digital skills deficits reflects that adults do not have a minimum level of basic literacy, numeracy and digital skills that would enable them to sustainably access quality employment and fully participate in society.

Blasquez & Jansen (2003) analysed the efficiency of the equilibrium allocation in a matching model with two types of workers and jobs. The basic assumption was that high-skill workers can perform both skilled and unskilled jobs, while low-skill workers can only perform unskilled jobs. One of the conclusions of this work was that in under certain conditions high-skill workers are under-valued in equilibrium, while the opposite holds for low-skill workers. Firms therefore tend to create too few unskilled jobs, resulting in a sub optimally high unemployment rate for low-skill workers. According those results, over education should also be prominent in economies with a very low labour share. In this case the explanation is less straightforward. Apparently, in economies with an over-creation of jobs, firms prefer to create unskilled jobs to limit the risk of skill mismatch. Similar findings were registered by Abrassart (2015). According this author, the economic growth boosts the creation of jobs for the low skilled. This means that the characteristics of a given job vacancy, in economic recession or economic recovering, also influences the fulfilment of that same vacancy.

As we said before a massive amount of studies uses the Beveridge Curve which plots unemployment against vacancies and typically shows a negative relationship. The most common interpretation is grounded in skills mismatch. This is indeed the most factual, rational

and statistical explanation. The Beveridge curve is also widely used to describe the labour market and to set apart structural shifts from cyclical changes (Bonthuis, Jarvis & Vanhala, 2013). It reveals a negative relationship between unemployment and vacancy rates over the business cycle, outlining the evolution of the economy from expansionary stages (with less unemployment and more vacancies) to contractions in economic activity (with more unemployment and less vacancies) (*idem*). The shifts in the Beveridge curve are of particular interest in times of crisis, since they are suggestive of structural changes in the unemployment-vacancy relationship (*Ibidem*).

2. Empirical Analysis

To illustrate those statements we have work over the *Instituto do Emprego e Formação Profissional* (IEFP) data in a specific period of time (Q2 2011 to Q2 2015). This time range is coincident with the crisis peak (2011-2012) and part of the subsequent growing Portuguese economy (since Q1 2013). We have used intentionally the whole data and particularly the sales professions data. We can observe in Graphic 1. that since Q2 2011 the registered unemployment raises and the vacancies drop sharply, until Q2 2012. Somewhere in the transition to Q2 2013 the opposite condition occurs. Registered unemployment begins to reduce and the number of registered vacancies slowly begins to rise. According the general interpretation and readings, these two movements indicate a decreasing efficiency in the labour market. In this framework the inefficient labour market is due to mismatches between available vacancies and the skills of the unemployed labour force (Rothwell, 2014).

In Graphic 2. we have calculated the Beveridge curve for the sales professions in particular. We can verify that the behaviour of the curve is similar to the previous one.

The interpretation of this curve can be diversified throughout the macroeconomic skills mismatches concept (Kiss & Vandeplass, 2015). According these authors, macroeconomic skills mismatches can be measured by the divergence among the labour market outcomes, in

particular employment and unemployment rates, of low, medium, and high-skilled workers. If different skill groups have very different chances on the labour market, this is an indication that there is a gap between the skills that workers have and the skills required by employers.

Applying this view to our Beveridge Curve (graphic 1. and 2.) we can state that the labour market matching has declined during the crisis, but recent quarters show positive signs of enhancement. During times of recession, unemployment increases and vacancies fall, while the opposite happens during recoveries (as throughout 2013-2014). However, most recent data indicate a reverse process of improving labour market matching. This suggests that the previous deterioration of matching efficiency may have been a cyclical phenomenon (Kiss & Vandeplas, 2015).

In face of this findings we have decide to apply other tool to explore the unfilled vacancies in IIEFP Employment Centres. We have used the relation between supply and demand, but at micro-level framework (sales professions). So, in the same period of time, we have used the received vacancies (i.e. the employment offers send by employers to Employment Centres) against the placements (i.e. the vacancies filled by the Employment Centres). The result is displayed in Graphic 3. Actually, this graph shows us a different reality. When the number of vacancies start to move up the number of placements start to move down. Only in the start of the end of the analysed period (Q2 2014) the placements star to rise. Even so, the relative difference among the two variables is higher in this period.

Giving these results we can notice that Beveridge Curve is not enough to explain the changes of unemployment and vacancies rates or to conclude about the mismatch effect. Furthermore, in micro level frameworks, this Curve is useless or don't has enough clarifying power. So the question remains: if the skill mismatch is not the key feature to enlightening the fact that a vacancy is not filled for long time, what is it?

3. Direct Variables that can lead to Unfilled Vacancies

3.1. Job Seeker Characteristics

The skill mismatch effect is indeed the most studied variable that contributes to the unfilled vacancies. The study carried out by CEDEFOP (2010) over this issue, underlines some conclusions. The report gives a broad overview of skill mismatch and the factors that contribute to it. First of all, skill mismatch refers not only to skill shortages or gaps, but also to qualifications, knowledge and skills exceeding job requirements. According this Centre there are different types of skill mismatch, such as: over education, over qualification, over skilling², skill obsolescence, vertical mismatch, horizontal mismatch, skill shortage, skill surplus and skill gap. The failure of employers to attract the 'right' workers and fill their vacancies may arise for many reasons other than genuine shortages of skill (CEDEFOP, 2015a). Related conclusions are reported by Duarte, Ceitel & Santos (2015).

The skill mismatch is a major variable that explains the unfilled vacancies from the job seeker/unemployed point of view. But also from the individual approach are there some more variables?

Other interesting feature is the voluntary turnover. A study carried out by Peres (2007), identified the main drivers of voluntary turnover on sales professions: the ease of movement (i.e. short time to find a new job), better wage and earnings and better personal and professional development chances in a prestige company. These findings are complemented by the research conclusions of Feeley & Barnett (1997). These authors argue that the voluntary turnover is due to the individual position of influence in the organization's communication network (social networks); its greater or lesser social integration and the degree of organizational commitment. They predicted that: a) structurally alike individuals would be more probability to behave similarly (i.e., leave or stay at their job), b) employees with a greater direct communication links with early leavers would be more likely to also leave their job and c) individuals located on the periphery

2 Those concepts include the opposite status: under education, under qualification and under skilling.

of a social network would be more likely to leave their current job or “fall off” the edges of the social network. According European Commission (2014b) the job turnover is slightly higher for the low educated than for the high educated. Within this previous study, it is possible to highlight another important variable: the educational level attainment. Moreover the European Commission (2014b) states that the lower education unemployed suffered most from the decline in recruitment demand during the recession periods. This means that the vacancies available in economic recessions are demanding medium or high educated workers, than low educated ones. In general, the higher the educational level attained the better the chances of getting a job, and this was particularly the case for young jobseekers (European Commission, 2014b).

Brown *et al* (2006) concluded that the success or failure of the job search depends on the individual level of proactivity, which declines over time (Krueger & Mueller, 2011). This means that the amount of applications to jobs or even the job search intensity, drops along the time of unemployment, and could eventually disappears at all. Tziner, Vered & Ophir (2004) found a negative correlation between the length of unemployment and the intensity of demand for employment. They have also found evidence of negative correlation of gender with the intensity of job search and the used device. Men activity of job searching is more intense and accurate than women, regardless the age (Tziner, Vered & Ophir, 2004).

Coelho (2003) stated complementary findings on the individual features: the gender difference (men get jobs quicker than women) and age (likelihood of getting a job decreases with age). In fact, CEDEFOP (2015a) found correlations between the proportion of female employees in an company and the probability of facing difficulties in finding suitable employees. In addition CEDEFOP (2015a) also finds that workforce gender composition in a firm is likely to replicate historical recruitment decisions.

3.2. Vacancy Features

From the point of view of the vacancy features there are also some bullet points to state. Coelho (2003) proved the time effect over a vacancy: when an employer displays a vacancy in Public Employment Services (PES) agency, the filling chance decreases over time.

Furthermore in this study, Coelho (2003) argue that in the clerical and services branches the vacancies are filled easier than, for instances, in industry (due to the industry higher specific skills needs). However in the clerical/services or sales professions despite the vacancy filling higher speed, there is simultaneously more unemployment due to a higher number of persons within this group of professions (Coelho, 2003; European Commission, 2014b). The study conducted by CEDEFOP (2015a) reported that companies related to health and social care are more likely to undergo difficulties in filling skilled jobs relative to those in manufacturing, once other characteristics of firms operating in different industries are considered.

The prestige (i.e. the positive or negative image) of the companies that offers a vacancy, makes recruiting the right candidates also a challenging endeavour (Manufacturing Institute, 2015).

The use of temporary contracts (or short term contracts) depends on factors such as employment protection legislation, seasonal demand and student jobs (European Commission, 2014a, 2014b) and can turn into an obstacle to someone accept a job. So, to minimise the difficulties in finding a skilled workforce, european companies must commit to offering high-quality apprenticeship places and good quality jobs, taking a long-term perspective to hiring (CEDEFOP, 2015a) instead of use temporary contracts. In this study, this Centre also underlines other two variables that affect a vacancy fulfilment: unattractive wages and poor or precarious working conditions.

The wage is also another variable to consider, in particular the reservation wage³. Is like the opportunity cost of accepting (or not) a job (Ophem, Hartog & Berkhout, 2011). The reservation wage is no longer constant over time but dependent on the duration of search (*idem*) and age (Krueger & Mueller, 2011). This means that according the previous wage (before unemployment) and/or the employment subsidy, an unemployed person only accepts a vacancy if the wage covers one of those values (Ophem, Hartog & Berkhout, 2011; Humpert & Pfeifer, 2013). Brown, Roberts & Taylor (2011) found that the reservation wage is higher for men and is lower with the length of unemployment.

Furthermore on the vacancy features is important to analyse the location of a job (Abraham, *et al*, 2013) and the mobility (or lack of it) issues. For CEDEFOP (2014) the lack of mobility can also grounds recruitment problems. Many skilled people move to work in more affluent areas or countries, but overall European labour market mobility tends to be low, not only due to reluctance to move, but as well to language barriers or due to absence of information on job opportunities (CEDEFOP, 2014).

The Human Resources Management practices also affect the vacancies fulfilment. The empirical analysis made by CEDEFOP (2015a) reveals that firms affected by shortages of skilled labour are more likely to depend on the practice of using overtime work to overcome production or sales constraints. CEDEFOP (2015a) also found that hiring difficulties for skilled jobs are also positively correlated with the provision of high performance work (HPW) practices. This may reflect the fact that companies with more innovative strategies are also more likely to adopt HPW, while there is also a positive association between innovative strategies and skill shortages (CEDEFOP, 2015a). Companies with difficulties in filling vacancies may also be more prone to implementing performance-related payments, given that the latter form of rewards can act as a sorting device that will attract more skilled workers to the company (*idem*). The Manufac-

3 The reservation wage is the lowest wage at which a worker would be willing to accept a particular type of job. A job offer involving the same type of work and the same working conditions, but at a lower wage rate, would be rejected by the worker. This means that is the wage that makes the difference between someone who is being unemployed or employed (Santos, 2014).

turing Institute (2015) also reports some difficulties to recruit, due to recruitment practices. Some vacancies that imply a written exam, screening tests or probationary initial periods, tend to be unfilled, as the candidates are not willing to clear the basic screening or probationary period (Manufacturing Institute, 2015).

The used sources (or devices) of employee recruitment have an important role (Santos, 2014, Manufacturing Institute, 2015) to fill a vacancy. Companies rated word-of-mouth and recruitment agencies as top device of recruitment for skilled production workers, and external search firms and internship programs as the top sources of recruitment for engineers, researchers, and scientists (Manufacturing Institute, 2015). This means that is likewise relevant the used device as the nature of the job (to select the device), as well the access that job seekers as to the device (Santos, 2014)

3.3. Administrative Issues

Another set of variables are related to the administrative issues. The fact of a vacancy is being displayed in a Public Employment Service (PES) or in a Private agency (or temporary work agency – TWA) can affect the inner filling process (European Commission, 2014b, CEDEFOP, 2015b). In general the private agencies are more accurate to fill vacancies than a PES (Santos, 2014), mainly due to the information available about a vacancy (Schmidl, 2015). This happens due mainly to the efficiency of private frameworks. In other way, the statistical constraints also affect the PES performance. When a company displays a vacancy, through PES, is frequently that it doesn't report, to the same PES, the corresponding filling. If this happens a vacancy can be statistically counted as vacancy, but in fact is not anymore. To avoid this statistical inaccuracy, many PES set with employers a validity limit or elapse time (Manufacturing Institute, 2015), to each vacancy (e.g. 30, 60, 90 days). After that period the vacancy is deleted from files. Despite the efforts carried out by ILO (2013) and Eurostat (2011) in streamline the statistical data collection and interpretation, there are always some constraints: a) when employers are recruiting in anticipation of turnover and growth, it is often difficult to control whether the recruiting activity is in connection with a filled or

an unfilled job; b) job vacancies with future starting are counted as vacancy, so the count would require, for appropriate interpretation, identification of seasonal patterns in each situation and c) to insure the accuracy of job vacancies data, it is necessary to ensure the accuracy of reporting by employers and the quality and consistency of PES internal procedures-sample design, editing, coding, and analysis.

CEDEFOP (2015a) also reports, besides the geographic and other administrative barriers, the lack of international recognition of qualifications and other qualifications legal issues.

3.4. Labour Market

The labour market questions remain, as well, an important relevance in unfilled vacancies. Related to this subject we can report some constraints. The first one was reported by Coelho (2003) and is the crowding out effect⁴. In times of economic recessions it is normal that governments display incentives to investment, in order to boost the employment. If these economic development public policies are addressed to the same economic clusters, the result could be an overload of vacancies at the same time (Coelho, 2003). This means that at the same time there are a set of vacancies that requires the same skilled labour force. The first job seekers are quickly hired and the remaining vacancies don't find any longer the right skilled workers to fill.

Also the trends in job vacancies, mainly if classified by occupation, could reveal on the ability of the economy to adjust to changes in labour demand. Job vacancy data can be applied more directly to the measurement of the efficiency of labour markets (e.g. Beveridge Curve analysis).

According CEDEFOP (2014) in many cases recruitment problems reflect labour market frictions, such as: low labour mobility, seasonal

⁴ The crowding out effect is argued by some economists to be a phenomenon that occurs when increased government involvement in a sector of the market economy substantially affects the remainder of the market, either on the supply or demand side of the market.

shifts in demand (e.g. tourism), lack of information and wage rigidities.

The size of the companies also affects the filling vacancies process. According CEDEFOP (2014) some firms, mainly SME ones (with perceived fewer resources for recruitment and training) may have difficulties in hiring or developing talent. This happens because job seekers may have the feeling of lower carrier development opportunities. Another reason that lead to a job seeker discard this kind of vacancies is the knowledge that they could have about the company backgrounds (prestige) or previous history.

Also described by Manufacturing Institute (2015) are the demographic and population characteristics. The ageing of population (mainly in European countries) leads to a lack of qualified and skilled labour force, due to retirement. On the other hand, this same ageing of population, leads to a creation of new vacancies related to elderly care and a lack of immediately qualified workers on those professions.

The economic cycle status also can lead to unfilled vacancies (Manufacturing Institute, 2015). On one side there is the strength of economy that creates quickly more jobs vacancies. On the opposite status (decreasing economy) the vacancies decreases quickly.

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In face of those variables, we are able to grouping these previous findings in four mains groups: administrative issues, vacancy features, labour market and job seeker characteristics. We represent this whole set of variables in figure 1.

Conclusions

In fact the unfilled vacancies are a multidimensional phenomenon. The use of simple Beveridge Curve analysis is not enough to explain a

so complex economic and social product. Not even the skill mismatch is a determinant variable to ground full explanations about it.

There isn't one specific solution to overcome the unfilled vacancies. Instead, a combination of strategies must be engaged in concert to address current and future issues. This means that multiple stakeholders have to collaborate to address the hiring gap. Companies have to rethink their talent sourcing and recruiting approaches to attract new employees, improve candidate selection practices, define clear skills models and role-based skills requirements, invest in internal training and development, and preview other attractive elements than wage. On the other side, the public and private stakeholders, as well social partners, have to contribute to the police definition that carries out these findings.

Knowing the main variables (administrative issues, vacancy features, labour market and job seeker characteristics) that affects the unfilled vacancies, the stakeholders may take early relevant actions in order to tackle this phenomenon, that as a crucial important to mitigate social inequalities and to help to fight the unemployment in all countries.

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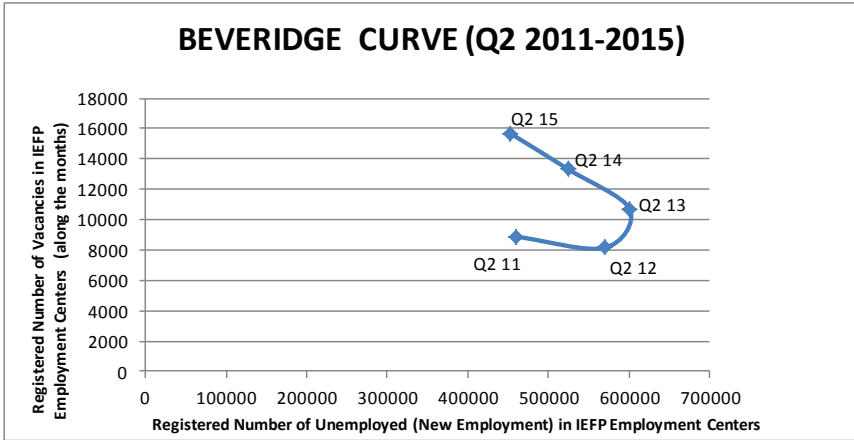
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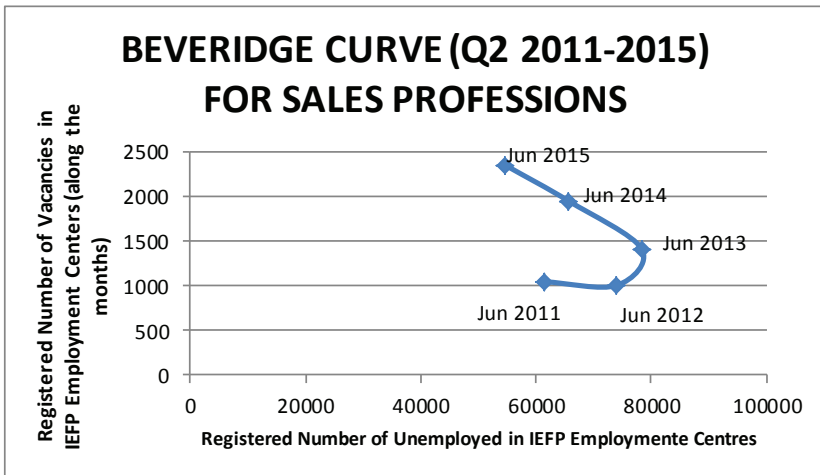
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Graphic 1. Beveridge Curve for IEFP data in Quarter 2 (2011-2015)



Source: Own calculations using IEFP data

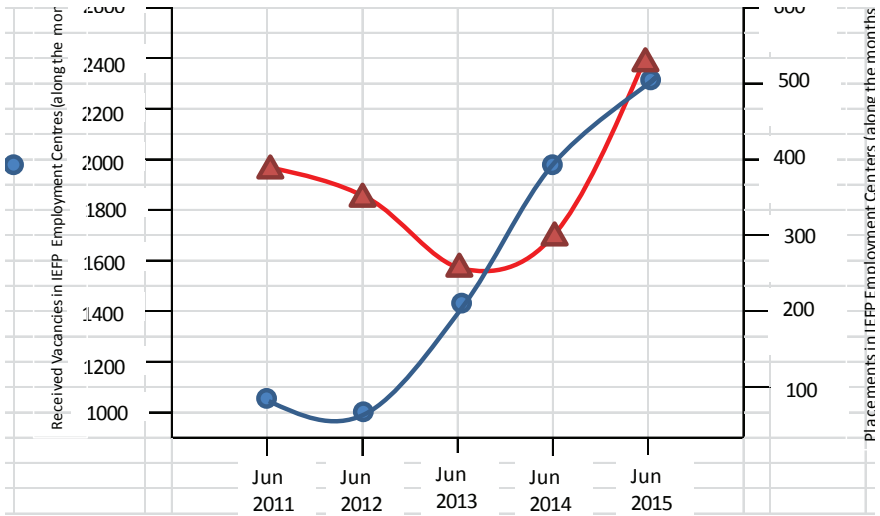
Graphic 2. Beveridge Curve for IEFP data in Quarter 2 (2011-2015) in Sales Professions



Source: Own calculations using IEFP data

Why there are so many unfilled vacancies and simultaneously high unemployment rates?

Graphic 3. Received Vacancies and Placements at IEFP data in Quarter 2 (2011-2015) in Sales Professions



Source: Own calculations using IEFP data

Figure 1. Variables that Can Lead to Unfilled Vacancies

