Economic Commentary

Labour market matching in Sweden

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In this Economic Commentary, we analyse how labour market matching in Sweden has changed since the early 2000s according to various indicators and estimates.[1] How efficiently unemployed persons and job vacancies are matched affects equilibrium unemployment and thus the assessment of how much spare capacity there is in the economy. Resource utilisation, in turn, affects wage pressures and inflation and is therefore important for monetary policy.

The results of the analysis show that matching efficiency initially deteriorated in the wake of the financial crisis and then again in conjunction with the pandemic. While it is common for matching efficiency to deteriorate in crises, there is a link between the failure to recover after crises and changes in the composition of the unemployed. Since the mid-2000s, there has been a relatively large increase in the number of foreign-born persons due to a large influx of refugees and their family members. On average, it takes a long time for these groups to become established in the Swedish labour market, which affects the overall matching efficiency. In recent years, matching efficiency has recovered somewhat, reflected in an increase in job opportunities for foreign-born persons. However, matching efficiency is still worse than it was before the financial crisis and unemployment among foreign-born persons remains at a high level.

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What is labour market matching?

Matching refers to how efficiently supply and demand for labour meet in the labour market. This Economic Commentary analyses how efficiently the unemployed and job vacancies are matched in the Swedish labour market.[3]

As it takes time for employers and potential employees to come into contact, both unemployment and vacant jobs exist simultaneously. Matching efficiency is affected by the economic situation but also by institutional factors such as the functioning of the education system and the design of unemployment insurance. Matching is more efficient if the unemployed have the education and experience sought by employers and if the labour force is mobile both occupationally and geographically.

Improved matching efficiency contributes to shorter periods of unemployment and thus to lower equilibrium unemployment.[4] This means that potential employment and output in the economy will be higher. Similarly, poorer matching efficiency leads to longer periods of unemployment, higher equilibrium unemployment and lower potential employment and output. One sign of poor matching efficiency is that unemployment is high at the same time as there are many job vacancies in the labour market. Another sign is that employers are finding it difficult to recruit people with the right skills.

The efficiency of labour market matching cannot be measured directly but it can be assessed using various indicators and estimates based on the job-finding rate of the unemployed and the number of vacancies and unemployed persons.

The Beveridge curve – an illustration of matching efficiency

A common way of describing the matching efficiency is to use the Beveridge curve, which relates the unemployment rate to the vacancy rate (see Figure 1).[5] Normally, there is a negative correlation between vacancies and unemployment. In an economic boom, the vacancy rate rises and unemployment falls, while, in a recession, the vacancy rate falls and unemployment rises. A movement along the Beveridge curve is

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[3] In addition to the number of matches in the labour market, that is matching efficiency, match quality is also important for a well-functioning labour market. Good match quality means that people are employed in jobs that make the best use of their skills. Match quality is difficult to measure. In the research literature, employee tenure and wage growth are often used as measures of match quality. If the quality of the match is high, the employee will stay in his or her job for a long time and enjoy good wage development. Studies on match quality require individual level data and are not analysed in this Economic Commentary. See, for example, Fredriksson et al. (2018) and Corragio et al. (2023) for research on match quality using Swedish data. See also Håkanson (2014) for earlier estimates of matching efficiency and Böhlmark and Waisman (2024) for an analysis of matching efficiency 1992–2022 using data from the Swedish Public Employment Service.

[4] Equilibrium unemployment is the level of unemployment considered attainable under the prevailing institutional conditions without the rest of the economy becoming unbalanced. The level may vary over time.

[5] Vacancies are job openings that are unstaffed and can be filled immediately. The vacancy rate is the number of vacancies in relation to the number of persons in the labour force.

usually interpreted as the result of cyclical variations, while an outward (inward) shift may indicate that the matching efficiency has deteriorated (improved). However, a shift may also be part of a cyclical development in which the Beveridge curve forms an outward or inward loop but then returns to the old relationship. How quickly it returns depends on the persistence (hysteresis) of the change in unemployment after a crisis. When there is strong hysteresis, it takes longer for matching efficiency to return to pre-crisis levels.

In Sweden, two clear outward shifts can be seen in the Beveridge curve, one in 2009 after the financial crisis and one in connection with the 2020 pandemic (see Figure 1).[6] Since 2022, the Beveridge curve has moved inwards again, almost returning to the relationship seen before the pandemic.[7]

Figure 1. Beveridge curve 2001–2024
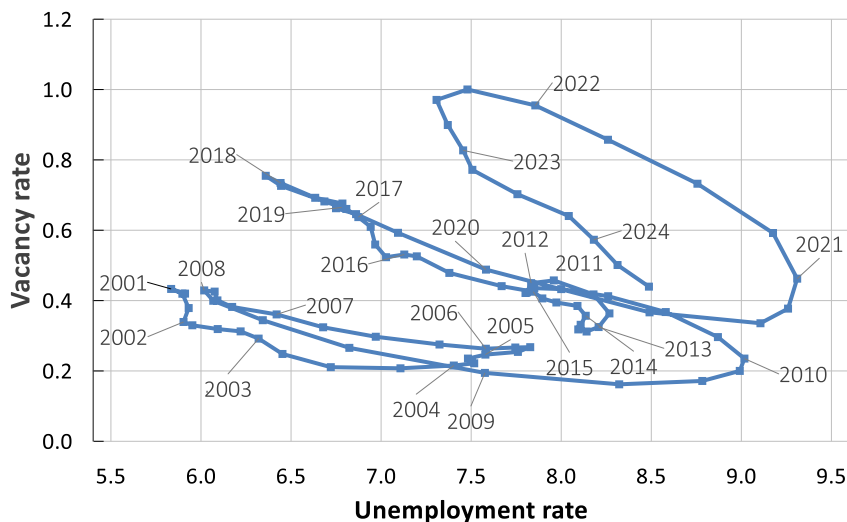
Note. Unemployment as a percentage of the labour force. The vacancy rate is defined as the number of vacancies in relation to the number of persons in the labour force. Statistics Sweden's statistics on job openings and vacancies were discontinued in the first quarter of 2024. Vacancies for the second and third quarters of 2024 have been projected using the trend in new job vacancies reported by the Swedish Public Employment Service.

Sources: Statistics Sweden and the Riksbank.

Outward shifts in the Beveridge curve are explained by crises and changes in the composition of the unemployed

It is natural for labour market matching to deteriorate in conjunction with a deep crisis but the failure of matching efficiency to recover after crises is mainly due to changes in the composition of the unemployed. Groups with lower job-finding rates,

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[6] The Beveridge curve shows similar movements if data from the Swedish Public Employment Service are used instead of data from Statistics Sweden.

[7] However, developments after the first quarter of 2024 should be interpreted with caution as Statistics Sweden's statistics on job openings and vacancies have been discontinued and vacancies for the second and third quarters of 2024 have been projected here using the trend for the Swedish Public Employment Service's newly registered job vacancies, which has historically had a strong correlation with Statistics Sweden's vacancies.

such as refugees and their family members, saw a relatively large increase in Sweden from the mid-2000s until the pandemic (see Figure 2). Many members of these groups initially lack several of the skills needed to quickly enter the Swedish labour market, such as Swedish language skills, relevant education and work-related networks. The proportion of jobs that do not require a specific education is low in the Swedish labour market and has also declined over time, while the share of people with at most lower secondary education has increased among the unemployed (see Figure 3). In addition, negotiated minimum wages are relatively high in Sweden. For many foreign-born persons, it takes time to become established in the Swedish labour market.[8] Consequently, aggregate matching efficiency also declines for quite some time after a large inflow of immigrants with low job-finding rates. When they have been in Sweden longer and have become established in the labour market, matching efficiency should recover.

**Figure 2. Immigration by grounds for settlement**

Thousands of persons
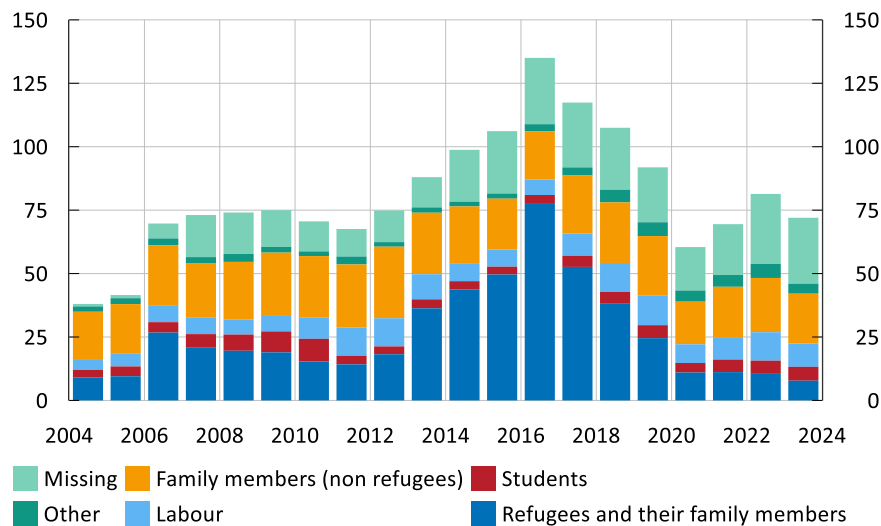
Note. Refers to persons registered as residents who have immigrated to Sweden, excluding Nordic citizens. No information is available for persons who do not need a residence permit or where the Swedish Migration Agency has not registered one. From 2014 onwards, citizens of EU countries do not need to register with the Swedish Migration Agency and are therefore included in the group for which information is missing.

Source: Statistics Sweden.

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[8] Among refugees and their family members who were received for resettlement by municipalities in Sweden in 2014–2018, 15–20 per cent were employed after one year and about half were employed after 4 years.

Figure 3. Proportion of elementary occupations and unemployed persons with low levels of education

Per cent of all unemployed persons (left axis) and all employed persons (right axis)

Share of unemployed with primary or lower secondary education (left axis)

Share of elementary occupations (right axis)
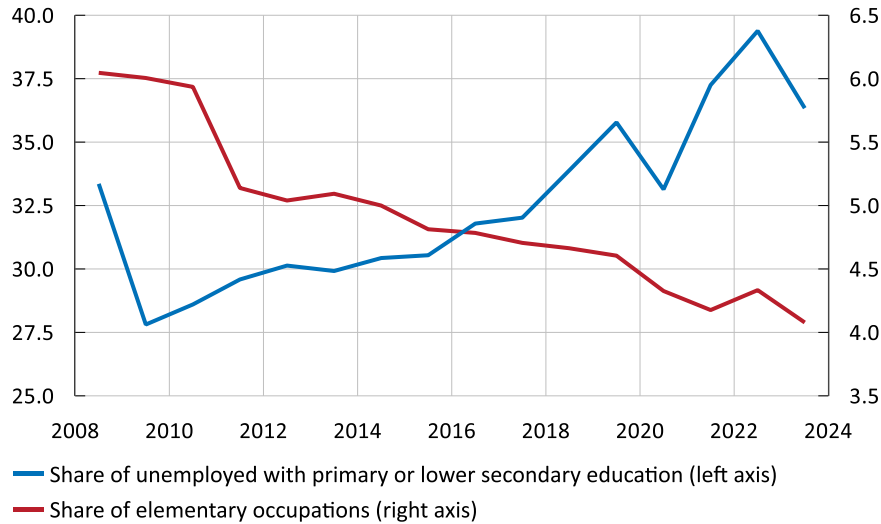
Note. Elementary occupations are jobs with no specific educational requirements, which means that the entry requirements are relatively low.

Sources: Eurostat and Statistics Sweden.

The deterioration in matching efficiency over time is mainly due to changes in the composition of the foreign-born population. This can be illustrated by drawing the Beveridge curve separately for Swedish-born and foreign–born persons (see Figure 4).[9] The Beveridge curve for foreign-born persons shifted outwards in 2009 and 2020. One likely explanation for the outward shift in connection with the pandemic is that sectors that employ many foreign-born persons, such as the hotel and restaurant sector, were particularly hard hit by the pandemic restrictions. As a result, unemployment among foreign-born persons increased more than among Swedish-born persons (see Figure 5).

Among Swedish-born persons, there are no similar shifts in matching efficiency but the changes appear to be cyclical movements along the curve. Figure 4 also shows that, in the third quarter of 2024, the Beveridge curve for both Swedish-born and foreign-born persons has reverted to the pre-pandemic relationship as post-pandemic hysteresis effects have faded. Matching efficiency among foreign-born persons has thus improved in recent years. The total Beveridge curve in Figure 1 continues to show slightly worse matching efficiency than in the years before the pandemic because foreign-born persons now make up a slightly larger share of the total number of unemployed people. It is likely that the Beveridge curve is also affected by the weak economic situation and that it may move inwards as the economy improves.

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[9] As it is not possible to separate vacancies for Swedish-born and foreign-born persons, the vacancy rate refers to all vacancies divided by the total labour force.

Figure 4. Beveridge curve 2005–2024 for Swedish-born and foreign–born persons
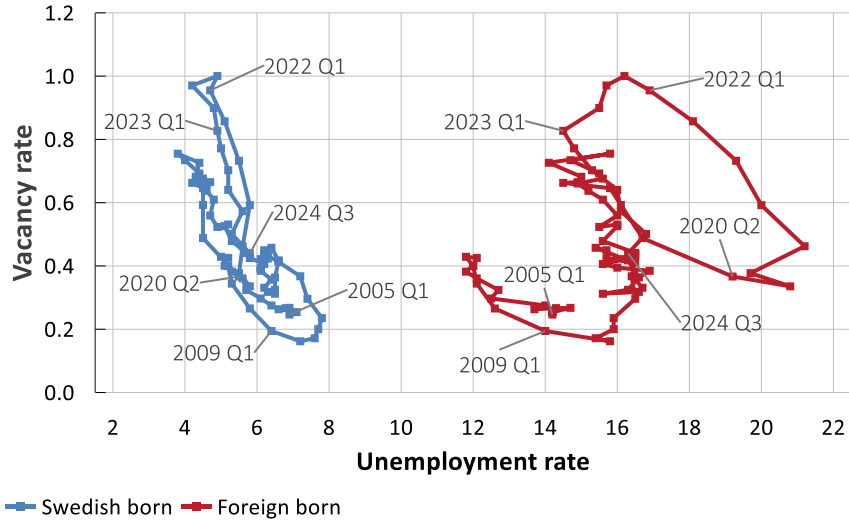

Note. Unemployment as a percentage of the labour force in each group. The vacancy rate is defined as the number of vacancies as a proportion of the labour force. Statistics Sweden's statistics on job openings and vacancies were discontinued in the first quarter of 2024. Vacancies for the second and third quarters of 2024 have been projected using the trend in new job vacancies reported by the Swedish Public Employment Service, which has historically had a high correlation with vacancies.

Sources: Statistics Sweden and the Riksbank.

Figure 5. Unemployment among Swedish-born and foreign-born persons, 15–74 years

Per cent of the labour force
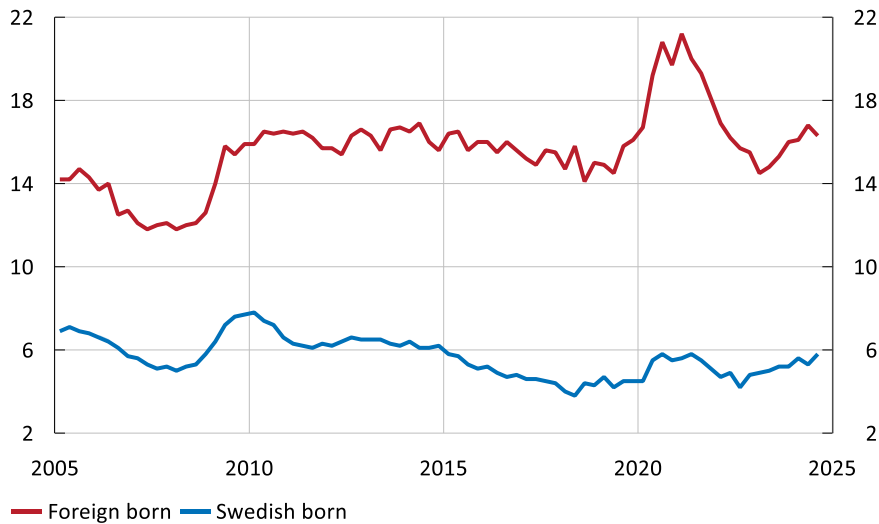
Source: Statistics Sweden.

Estimated matching function – job-finding rate varies with the economic situation

Another way to measure matching efficiency is to estimate a relationship between the aggregate job-finding rate and the labour market conditions.[10] The aggregate job-finding rate is defined here as the proportion of unemployed persons who move from unemployment to employment in one quarter. The labour market conditions are defined as the number of vacancies in relation to the number of unemployed persons in the previous quarter.

Figure 6 shows an estimate of the historical correlation between the job-finding rate and the labour market conditions (red line) from 1997 to 2014 and thereafter a model forecast of what the job-finding rate would have looked like if it had followed this historical correlation (red dashed line).[11] The figure shows that the expected job-finding rate varies with the economic situation. Unemployed persons are much more likely to find employment in booms than in recessions. The figure also shows that the actual job-finding rate (blue line) was significantly lower than the model forecast between the third quarter of 2016 and the first quarter of 2020. Since then, the actual job-finding rate has been volatile but broadly in line with what is suggested by the historical correlation with labour market conditions. The matching function thus shows that matching efficiency was low for a long period but that it has recovered in recent years.

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[10] The estimated model is $\ln(M_t/U_t) = a + b*\ln(V_{t-1}/U_{t-1}) + \varepsilon_t$ where M is the number of matches, U is the number of unemployed persons and V is the number of vacancies. The model thus shows how the aggregate job-finding rate (the number of matches in relation to the number of unemployed persons) is explained by the labour market conditions (the number of vacancies in relation to the number of unemployed persons in the previous period). The model is estimated with quarterly data for the period 1997–2014, after which a forecast is made of the job-finding rate for 2015–2024, in which job opportunities are assumed to follow the historical relationship with the labour market conditions. The model assumes that the matching function is constant over time, so that all variation in the job-finding rate is driven by fluctuations in vacancies and unemployment, and that matching is random.

[11] After 2014, refugee arrivals were very high for some years, leading to an unusually high inflow into the labour market of groups with a low job-finding rate. This by definition entails poorer matching efficiency. If the latter time period is included in the estimation, the model estimate gives much lower expected job-finding rates. We have chosen to estimate the historical correlation for the period 1997–2014, as part of the purpose of the analysis is to see whether matching efficiency has returned to the historical correlation that applied before the major refugee crisis in 2015.

Figure 6. Matching function 1997–2024

Job-finding rate, per cent

Estimated job-finding rate   Actual job-finding rate   Uncertainty interval
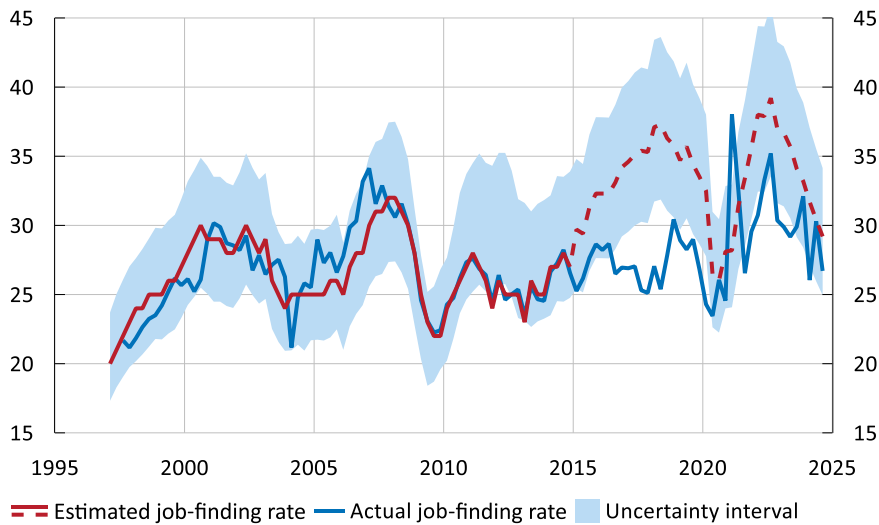
Note. The matching function is estimated using data for the period 1997–2014. After this, the red dashed line shows a model forecast of the job-finding rate where it is assumed to follow the historical relationship with the labour market conditions. The blue line shows the actual job-finding rate. Statistics Sweden's statistics on job openings and vacancies were discontinued in the first quarter of 2024. Vacancies for the second and third quarters of 2024 have been projected using the trend in new job vacancies reported by the Swedish Public Employment Service, which has historically had a high correlation with vacancies.
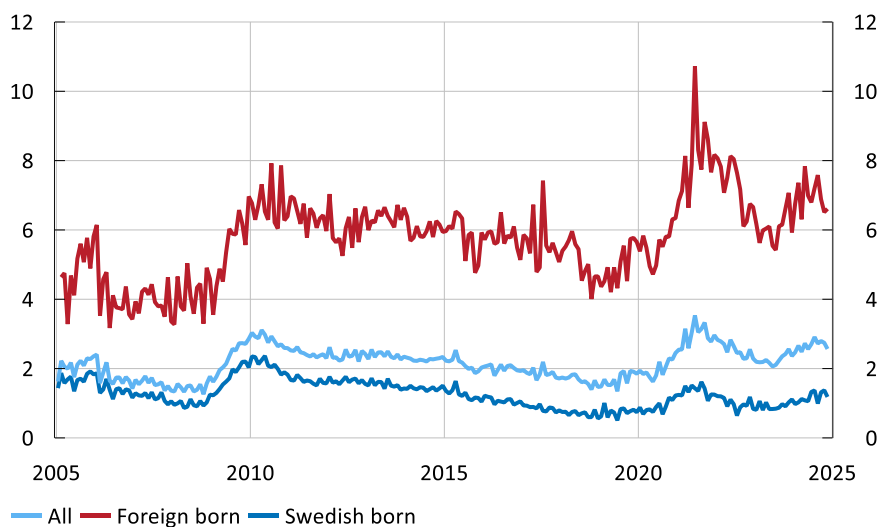
Sources: Statistics Sweden and the Riksbank.

Other indicators give a mixed picture of matching efficiency

High unemployment suggests poor matching efficiency

Although both the Beveridge curve and the matching function indicate that matching efficiency has improved somewhat in recent years, unemployment among foreign-born persons remains high (see Figure 5). Moreover, long-term unemployment among foreign-born persons (which rose sharply during the pandemic) has not recovered but has instead risen again over the past year (see Figure 7).

Figure 7. Unemployed 27 weeks or longer, 15–74 years

Per cent of the labour force

Note. The series have been seasonally adjusted by the Riksbank.

Sources: Statistics Sweden and the Riksbank.

An important explanation for the continued high unemployment among foreign-born persons is that labour force participation has increased substantially (see Figure 8).[12] Behind this increase are many structural changes in the labour market, such as fiscal reforms that have increased the financial incentives to participate in the labour force.[13] Thus, there have been new entrants to the labour force and to the group of jobseekers, which keeps the unemployment rate high.[14] Another explanation for the increase in unemployment is that the economic situation has deteriorated, which is also an important explanation for the increase in long-term unemployment.

Sharp increase in employment rate among foreign-born persons suggests improved matching efficiency since the pandemic

One sign that matching efficiency may have improved, even though unemployment and long-term unemployment have remained high, is that the employment rate

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[12] The fact that labour force participation among foreign-born persons is higher than among Swedish-born persons in the age group 15–74 years is due to the fact that foreign-born persons have a different age distribution, with fewer persons over the age of 65. Persons older than 65 years have on average a low labour force participation rate, which means that the labour force participation rate for Swedish-born persons in the age group 15–74 years is lower than for foreign-born persons. In the age group 25–54 years, the labour force participation rate of those born in Sweden is now 3 percentage points higher than that of those born abroad. In the third quarter of 2024, the labour force participation rate in the 25–54 age group was 93 per cent among those born in Sweden and 90 per cent among those born abroad.

[13] Examples of such reforms include the earned income tax credit and changes to sickness and unemployment insurances and the old-age pension system. Foreign-born persons have also been affected by targeted reforms aimed at increasing the labour market integration. For example, there was a greater focus on the labour market when the main responsibility for the integration of newly arrived refugees was transferred from the municipalities to the Swedish Public Employment Service in 2011. Many municipalities have also begun to require that people receiving income support should be registered as job-seekers at the Swedish Public Employment Service.

[14] To some extent, this may also be due to the changes made to Statistics Sweden's Labour Force Survey (LFS) in January 2021. Since the changes, the LFS seems to capture more unemployed persons than before, especially among the young.

among foreign-born persons rose sharply after the pandemic (see Figure 8). Despite a slight decline over the past year, the employment rate for foreign-born persons is almost 4 percentage points higher than before the pandemic. The recent weak outcomes for real wages have probably kept up the demand for labour.

Figure 8. Labour force participation rate and employment rate among Swedish-born and foreign-born persons, 15–74 years

Percentage of population in each group
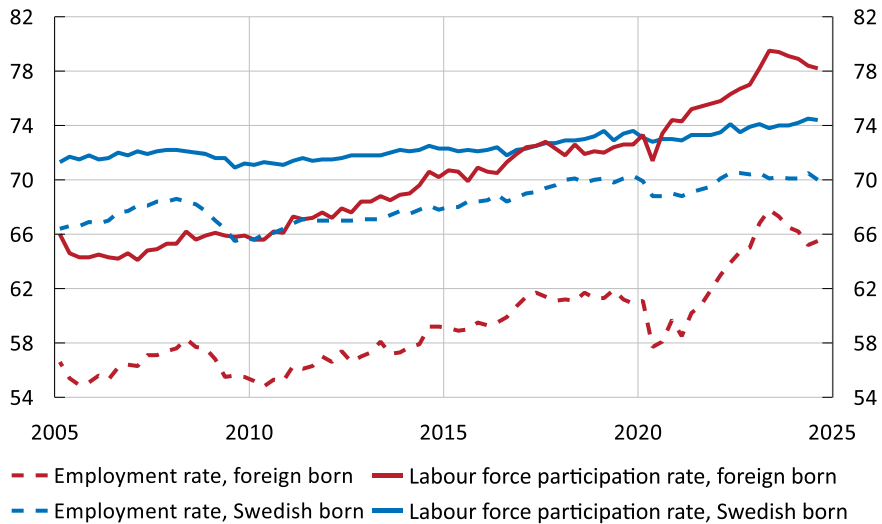
Source: Statistics Sweden

Statistics Sweden does not publish job-finding rates for persons born in Sweden and abroad in the LFS, but the Swedish Public Employment Service's data for the registered unemployed show that job opportunities for persons born outside Europe are now at a higher level than before the pandemic (see Figure 9). However, the level remains lower than for all those registered as unemployed.

Figure 9. Job-finding rate for unemployed persons registered at the Swedish Public Employment Service

Per cent of the registered unemployed

All registered unemployed at the Swedish Public Employment Service
Unemployed persons born outside Europe
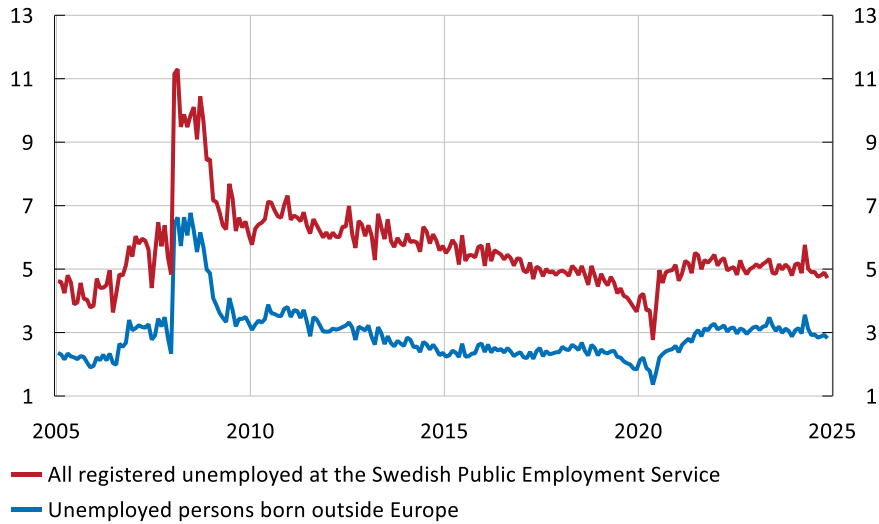
Note. The job-finding rate is the percentage of registered unemployed persons who found a subsidised or unsubsidised job during the month.

Source: Swedish Public Employment Service.

Do lower labour shortages indicate reduced matching problems?

Another sign of a matching problem is if labour shortages are high while there are many unemployed. Labour shortages have been very high but have eased in many sectors since the second half of 2022 (see Figure 10). This could be an indication of reduced matching problems. However, lower labour shortages are probably partly due to the weak economic situation and there is a risk that labour shortages will rise again when the economy improves. Moreover, labour shortages remain relatively high in the manufacturing sector.

Figure 10. Labour shortages in different sectors
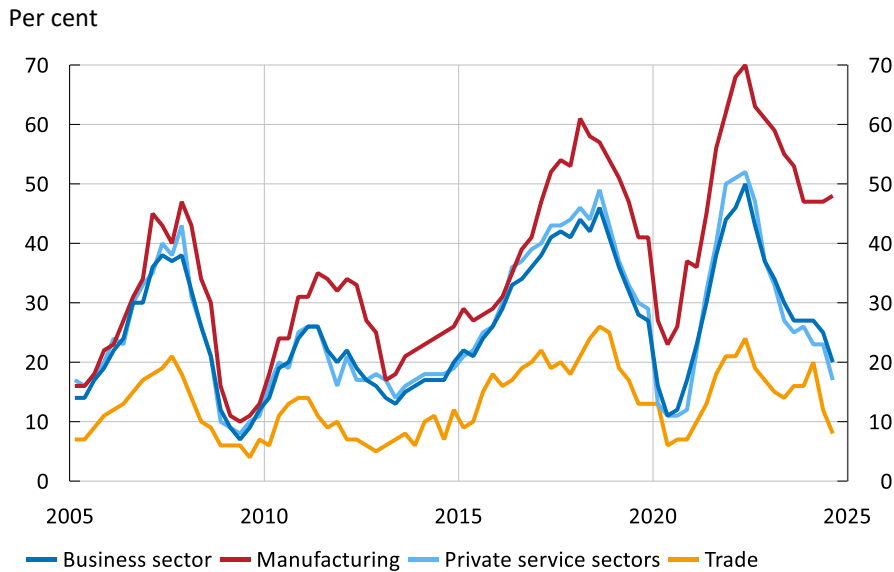
Per cent

Note. Percentage of companies responding yes to the question of whether they have experienced a shortage of labour.

Source: National Institute of Economic Research.

Conclusions

The Beveridge curve shows that matching efficiency between unemployed persons and job vacancies in the Swedish labour market deteriorated both after the financial crisis in 2009 and in connection with the 2020 pandemic. It is common for matching efficiency to deteriorate in times of crisis. However, the fact that it has not recovered from the crises can largely be explained by the changing composition of the unemployed as a result of large-scale refugee and family immigration, from the mid-2000s until the pandemic. According to the Beveridge curve, matching efficiency has recovered somewhat in recent years, although not quite to the same level as in the years before the pandemic. This is because foreign-born persons currently make up a slightly larger share of total unemployment and have a lower job-finding rate on average. The estimated matching function shows that the job-finding rates for the unemployed have now largely returned to the historical correlation with the labour market conditions, after a prolonged period of poorer matching efficiency. This contributes to lower equilibrium unemployment.

The fact that the improved matching efficiency in recent years is not reflected in the unemployment figures is partly due to the economic situation and partly to an increased inflow into the labour force, and thus higher labour force participation rate. While unemployment is high, even the employment rate is at a high level. Despite some decline over the past year, the employment rate for foreign-born persons is almost 4 percentage points higher than before the pandemic. Focusing solely on unemployment therefore paints too bleak a picture of the Swedish labour market in general and the situation of foreign-born persons in particular. Matching efficiency varies with the economic situation and there is reason to believe that it will continue to improve as the economy recovers.

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