Reforms in transition countries have caused important adjustments in agricultural employment. The adjustments differ strongly between countries. For example, in Hungary and Estonia labour use in agriculture has declined dramatically, in Poland and Slovenia it has decreased to a lesser extent and in Romania and Russia agricultural employment increased during transition. This paper argues that the differences in labour adjustment during transition are due to a combination of variations in initial conditions and differences in reform policies. The extent of reform-induced price and wage adjustments affected labour use in agriculture. Surplus labour outflow from agriculture is further stimulated by liberalisation of factor markets and by the privatisation of farm assets, improving incentives and removing constraints for optimal factor allocation and structural adjustments. The shift to individual farms has reduced the outflow of labour from agriculture by improving farm governance and labour efficiency.

Key words: agricultural farms, employment, individual farms, Central and Eastern Europe, transition

AGRICULTURAL EMPLOYMENT DURING TRANSITION
Reforms in transition countries (TCs) have strongly affected output and factor markets. A key issue is the impact of the reforms on the labour market because labour is the key source of income for many people in TCs, especially for the poorest countries and the poorest groups within a country.

The pre-transition share of agriculture in total employment varied from around 10% in the TCs with the highest income per capita, such as Slovenia and the Czech Republic, to around 50% in Albania (Table 1). Among the Central and Eastern European countries (CEECs), also Poland and Romania have high agricultural labour shares. Given the importance of agricultural employment in TCs, agricultural labour adjustments and their causes and effects should be of special interest.

Labour adjustments have not been uniform in TCs (Table 1)(1). During the first five years of transition, labour employment in agriculture declined dramatically (around 50%) in the Czech Republic, Slovakia, and Hungary (CSH). In Slovenia and Poland, labour use in agriculture declined by 10-15%. In contrast, agricultural employment increased during the first five years of transition in TCs such as Romania, Russia and Ukraine. An important difference can be observed between the Baltic countries. Estonia, as CSH, has experienced a dramatic decline in agricultural labour input, while Latvia experienced only a moderate fall in agricultural employment and Lithuania saw a significant increase of labour use in agriculture.

Figure 1 shows the evolution of agricultural employment between 1988 and 1995 in seven CEECs. In Hungary, the Czech Republic and Slovakia, the decline in agricultural labour use has been dramatic, with employment in agriculture after six years of transition more than fifty percent lower than at the start of transition. In Poland and Slovenia, the decline in agricultural employment has been less dramatic. Between 1988 and 1995 labour use in agriculture has decreased by almost 20%. In Bulgaria and Romania, the level of agricultural employment in 1995 was approximately 10% higher than in 1988.

In general, there is an inverse relationship between economic growth and the share of agriculture in total employment. However, the dramatic institutional and economic shocks caused by the shift from a socialist system to a market-based economy have substantially affected this long run fundamental relationship in transition countries.

The next section discusses the impact of transition and institutional reform on agricultural labour adjustment. The discussion is based on a formal model and a statistical analysis, as presented in Swinnen, Macours and Dries (1999).

2 CAUSES OF EMPLOYMENT ADJUSTMENT IN AGRICULTURE

2.1 Privatisation and liberalisation of the economy
Privatisation of the agricultural sector and liberalisation of the economy have a negative impact on agricultural employment. Privatisation (Table 2) will result in the removal of employment

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(1) There are definitional and statistical problems with the data on farm labour in transition countries. However, just as in the case of statistical biases in output measurements, while there are no doubt important biases, the strong patterns which emerge from the data may be partly statistics but do reflect also important real effects. Most studies agree that despite substantial real adjustment in input and output markets have occurred. For the agricultural labour data, case studies for countries where detailed statistics are available indicate that the broad patterns identified in our analyses are at most only partially due to statistical bias, and are robust to statistical corrections.
Table 1  Agricultural employment in transition countries

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>10</td>
<td>-46</td>
</tr>
<tr>
<td>Hungary</td>
<td>18</td>
<td>-56</td>
</tr>
<tr>
<td>Poland</td>
<td>26</td>
<td>-15</td>
</tr>
<tr>
<td>Slovakia</td>
<td>12</td>
<td>-50</td>
</tr>
<tr>
<td>Albania</td>
<td>49</td>
<td>-3</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Romania</td>
<td>28</td>
<td>14</td>
</tr>
<tr>
<td>Slovenia</td>
<td>12</td>
<td>-5</td>
</tr>
<tr>
<td>Estonia</td>
<td>12</td>
<td>-44</td>
</tr>
<tr>
<td>Latvia</td>
<td>16</td>
<td>-8</td>
</tr>
<tr>
<td>Lithuania</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Belarus</td>
<td>19</td>
<td>-9</td>
</tr>
<tr>
<td>Russia</td>
<td>113</td>
<td>6</td>
</tr>
<tr>
<td>Ukraine</td>
<td>20</td>
<td>4</td>
</tr>
</tbody>
</table>

(3) Source: OECD, World Bank, ILO and national statistics

Tabulka 1  Zamestnanost v polinohospodarstve v prechodoqch krajinach

(1) podiel polinohospodarskeho sektoru na celkovej zamestnanosti (1989), (2) zmeny vo vyuEvani pracovOch sil v polinohospodarstve (1989)


2.2 Farm restructuring

The privatisation process has also caused a restructuring of the farms as the overall share of land in individual farms has increased during transition. However, this increase has not been homogeneous over the different countries. Table 2 shows that the growth in individual farming has been most important in Romania and Bulgaria. While growth in individual farming seems fairly insignificant in Poland and Slovenia during transition, it should be noted that in these countries, agriculture was mainly organised in individual farms even before the start of the reforms. Individual farming is still of minor importance in the organisation of agriculture in the Czech Republic, Slovakia and Hungary.

Figure 2 shows the relationship between the shift to individual farming and the change in agricultural employment. Decollectivization of agriculture is positively correlated with agricultural labour use. This is consistent with the theoretical model, which states that the shift to individual farms is expected to increase efficiency of labour governance (Carter, 1984; Lin, 1988; Schmitt, 1991). With increased marginal productivity, labour use increases with a shift to individual farms.

2.3 Price and trade liberalisation

Price and trade liberalisation caused a strong decline in agricultural terms of trade (Table 2 and Figure 3). Since 1990, agricultural terms of trade have deteriorated in all the transition countries in our sample. The effect was a strong decline in the profitability of the farms. As a consequence, there was an important reduction in the use of inputs in agriculture, including labour. Furthermore, the results suggest that especially changes in the relative cost of inputs have affected labour allocations and that substitution effects have been important. This is consistent with results from Rozelle et al. (1998) and Macours and Swinnen (1999) that labour substitution for capital inputs has been very important in transition countries with strongly increasing prices for capital inputs relative to farm labour.

2.4 Food and social security

More generous unemployment benefits and pensions stimulate an outflow of surplus labour from agriculture. As a consequence, higher income countries (Table 2), with better developed social welfare systems, have a stronger outflow of labour from agriculture.

Finally, the relative importance of individual farming has a positive impact on agricultural labour. Individual farming may provide an important source of household food – and, more generally, social- security, especially when a social welfare system is absent or deficient. To capture this effect, we use the share of land in individual farming (Table 2). The opportunity costs of the people with individual farms to leave agriculture will be higher, and therefore the flow of labour out of agriculture lower.

3 IMPLICATIONS

As described in the introduction and in Table 1, the CEECs differ strongly in their agricultural labour adjustment patterns during transition. From the results of our analysis we can draw the following explanations of these patterns.

The different adjustment patterns are due to a combination of initial conditions (i.e. pre-reform characteristics) and differences in reform policies. A decline in terms of trade reduced the demand for labour in agriculture in all CEECs. This reduction in demand was offset by an increase in demand due to decreasing prices for other inputs vis-a-vis wages. This effect was particularly strong in Romania and contributed to the increase in agricultural labour during transition.

In the Czech Republic, Slovakia, Hungary, Poland and Slovenia, strong(er) liberalisation of the economy reduced constraints for intersectoral labour mobility. In contrast, overall
## Table 2 Agricultural and economic indicators

<table>
<thead>
<tr>
<th>Country</th>
<th>Land in individual farms (%), 1989 (1)</th>
<th>Land individual farms (% change 88-95) (2)</th>
<th>Land in private ownership (% change 89-95) (3)</th>
<th>Agr. output price/agr. input price (% change 88-95) (4)</th>
<th>Liberalisation index (%), 1995 (5)</th>
<th>GNP per capita (PPPS, 1989) (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>0</td>
<td>19</td>
<td>81</td>
<td>0.57</td>
<td>93</td>
<td>8600</td>
</tr>
<tr>
<td>Hungary</td>
<td>13</td>
<td>9</td>
<td>77</td>
<td>0.72</td>
<td>90</td>
<td>6810</td>
</tr>
<tr>
<td>Poland</td>
<td>76</td>
<td>9</td>
<td>1</td>
<td>0.36</td>
<td>89</td>
<td>5150</td>
</tr>
<tr>
<td>Slovakia</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>0.69</td>
<td>86</td>
<td>7600</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>14</td>
<td>30</td>
<td>38</td>
<td>0.60</td>
<td>58</td>
<td>5000</td>
</tr>
<tr>
<td>Romania</td>
<td>14</td>
<td>42</td>
<td>66</td>
<td>0.47</td>
<td>71</td>
<td>3470</td>
</tr>
<tr>
<td>Slovenia</td>
<td>83</td>
<td>7</td>
<td>3</td>
<td>0.86</td>
<td>85</td>
<td>9200</td>
</tr>
</tbody>
</table>

Source: de Melo et al. (1996), Swinnen (1994), Swinnen, Buckwell and Mathijs (1997), OECD (1996) and national statistics

Liberalisation in Romania and Bulgaria moved much slower, constraining intersectoral labour flows.

Enterprise restructuring strongly affected labour adjustments. The outflow of labour is strongest in the countries, such as Czech Republic, Slovakia and Hungary (CSH), where the large-scale farms have remained dominant in agriculture. The shift to individual farms is much stronger in the transition countries, such as Romania and Albania, which experienced an inflow or preservation of the labour force in agriculture during the first years of transition. The break-up of the collective and state farms in labour-intensive agricultural production systems in these countries induced strong gains in labour efficiency (Mathijs and Swinnen, 1998). These efficiency gains have reduced the outflow of labour from agriculture.

In contrast, the reformed collective and state farms with independent company management have laid off a large amount of workers, except those that voluntarily left the farms for other employment. Moreover, the difference between CSH versus Poland and Slovenia can be attributed to this factor. Both Poland and Slovenia are characterised by a domination of small family farms, even pre-reform. These structures have reduced the outflow of labour.

Furthermore, in low income transition countries such as Romania or Albania, agriculture and household farming provides food and social security, in contrast to the countries such as the Czech Republic, Slovakia and Hungary where the state provides more extensive social security and unemployment benefits, pensions, etc. This household security further limits the outflow of labour from agriculture in these poor countries with more individual farms.

### 4 CONCLUSIONS

Reforms in TCs have strongly affected agricultural employment but in remarkably different ways between TCs. In the TCs such as Hungary and Estonia labour use in agriculture has declined dramatically. In others (e.g. Poland and Slovenia) it has decreased to a lesser extent and in some (e.g. Romania and Russia) agricultural employment increased during transition.

This paper provides an explanation of the differences in labour adjustment during transition. We show that the differences are due to a combination of variations in initial conditions and differences in reform policies. The extent of price distortions and subsidies under the communist system has affected wage and price adjustment during transition and the resulting effect on labour use...
in agriculture when prices were liberalised and subsidies cut. The reform policies that had a strong influence on labour adjustment were, besides price and trade liberalisation, privatisation of production factors, farm transformation policies, and the set of general reform policies which liberalised factor markets and removed obstacles for improved factor allocation and mobility throughout the whole economy. Surplus labour outflow from agriculture is stimulated by these liberalisation policies and by the privatisation of the farm assets as they improve incentives and remove constraints for optimal factor allocation and structural adjustment. Finally, the shift to individual farms, which was especially strong in labour-intensive production systems with low labour productivity in agriculture, has reduced the outflow of labour from agriculture by improving farm governance and labour efficiency.

Súhrn

Reformy v prechodových krajínách spôsobili vážne zmeny v oblasti zamestnanosti v polohospodárstve, prítom tieto zmeny sa medzi jednotlivými krajínami velmi lišia. Napríklad v Maďarsku a Estónsku sa počet polohospodárskych pracovníkov dramaticky znižil, v Polsku však bol tento pokles nižší a v Rumunsku a Rusku sa počas prechodového obdobia ich počet zvýšil. Diskutuje sa o tom, že rozdiely v polohospodárskej zamestnanosti počas prechodového obdobia spôsobili odlitky v počiatočných podmienkach a rozdiely v reformnej politike. Na využívanie pracovných sil v polohospodárstve mal vplyv rozsah reformy cien a mzدové úpravy. Stíhalo pre únik naďblyčnej pracovnej síly z polohospodárského sektoru je aj liberalizácia trhu výrobných faktorov a privatizácia polohospodárského majetku, čím sa zlepšuje motivácia a odstraňujú prekážky optimálneho rozmiestnenia faktorov a štruktúrnych úprav. Návratom k samostatnému hospodárstvu sa zlepšilo riadenie a zvýšila sa efektívnosť práce, v dôsledku čoho poklesol aj odliv pracovných síl z polohospodárstva.

Klúčové slová: polohospodárstvo, zamestnanosť, individuálna hospodárenie, krajiny strednej a východnej Európy, prechodové obdobie, reforma

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