OECD Economics Department Working Papers No. 533

Improving Labour Utilisation in Brazil

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https://dx.doi.org/10.1787/353720822276

OECD

Unclassified **ECO/WKP(2006)61**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development **06-Dec-2006**

English text only

ECONOMICS DEPARTMENT

ECO/WKP(2006)61
Unclassified

IMPROVING LABOUR UTILISATION IN BRAZIL

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By
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JT03219353

English text only

ABSTRACT/RÉSUMÉ

Improving labour utilisation in Brazil

Labour force participation is comparable to the OECD area for prime-age males. It is somewhat lower for females and is trending down for youths as a result of rising school enrolment. The labour market is placing an increasing premium on skills, making it particularly difficult for the less educated to find a job. Labour informality is pervasive and turnover high, especially for the less educated, discouraging investment in labour training and the acquisition of job-related skills, and perpetuating income disparities. The main policy challenge is to improve labour utilisation by reducing informality and fostering human capital accumulation on and off the job. A stable macroeconomy is a pre-condition for reducing unemployment, but a greater focus on activation within the current policy framework would be advisable. To close the remaining gender gap, female labour force participation in full-time jobs could be encouraged by increasing the supply of affordable child care and pre-school education. Labour turnover can be reduced by mitigating the incentives for negotiated separation, which currently arise from the design of severance insurance (FGTS) in the event of unfair dismissal. Skill marketability can be enhanced through the introduction of a national skills certification system, and labour training can become more cost-effective through increased contestability in existing programmes.

This Working Paper relates to the 2006 *Economic Survey of Brazil* (www.oecd.org/eco/surveys/brazil).

JEL classification: J08, J20, J30
Key words: labour market, informality, employability, probit

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Accroître l'utilisation de la main-d'œuvre au Brésil

Le taux d'activité est comparable à celui de la zone OCDE pour les hommes d'âge moyen, mais il est un peu plus bas pour les femmes et a tendance à baisser pour les jeunes, parallèlement aux progrès de la scolarisation. Le marché du travail est de plus en plus favorable aux travailleurs qualifiés et il est donc devenu particulièrement difficile pour ceux qui ne le sont pas de trouver un emploi. Le travail non déclaré est très répandu et les taux de rotation élevés qui le caractérisent, surtout pour les travailleurs peu qualifiés, découragent l'investissement dans la formation de la main-d'œuvre et l'acquisition de qualifications liées à l'emploi. Pour les pouvoirs publics, le principal défi à relever est donc d'accroître l'utilisation de la main-d'œuvre en luttant contre le travail non déclaré et en favorisant l'accumulation de capital humain dans l'emploi et hors emploi. Un environnement macroéconomique stable est un préalable indispensable pour faire reculer le chômage, mais le développement des mesures d'activation dans le cadre actuel de l'action gouvernementale paraît également souhaitable. Pour achever de combler l'écart d'activité entre les sexes, on pourrait encourager les femmes à travailler à temps plein en développant l'offre de services d'accueil et d'éducation préscolaire d'un coût abordable pour les enfants, tandis que pour atténuer la rotation de la main-d'œuvre, il faudrait agir sur les incitations au départ négocié qui découlent actuellement du régime d'assurance contre la perte d'emploi (FGTS) en cas de licenciement abusif. Enfin, on valoriserait davantage les qualifications sur le marché grâce à la mise en place d'un système national de certification et on rendrait la formation professionnelle plus efficace et plus économique en introduisant davantage de concurrence dans les programmes existants.

Ce Document de travail se rapporte à l'*Étude économique du Brési*, 2006 (www.oecd.org/eco/etudes/bresil).

JEL classification J08, J20, J30
Mot -clés : marché du travail, informalité, employabilité, probit

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Improving labour utilisation in Brazil

Luiz de Mello, Naércio Menezes Filho and Luiz G. Scorzafave[1]

1. Introduction

To raise the economy's growth potential through a better use of labour inputs, Brazil faces the challenge of increasing labour utilisation and boosting labour productivity through human capital accumulation on and off the job. The rate of labour force participation is comparable to the OECD area for all segments of the working-age population, although it is somewhat lower for prime-age females. Informality is widespread, especially among the less educated, for whom labour turnover is also high, discouraging investment in productivity-enhancing human capital accumulation through labour training. The labour market is offering greater rewards for skills, a trend that is associated with the pro-competition reforms of the 1990s, including trade and investment liberalisation. But, while rising returns create incentives for youths to delay entry into the labour market so as to spend more time in education, the demand for unskilled labour is declining, worsening the job prospects of the less educated. These trends underscore the need for policy action to tackle labour informality and to encourage human capital accumulation, including for those who are already in the labour market.

Against this background, this paper reviews recent trends in labour market performance in Brazil and discusses policy options that may contribute to improving labour utilisation towards raising the economy's growth potential. The remainder of the paper is organised as follows. Section 2 discusses trends in labour supply, unemployment and earnings. This descriptive analysis is complemented by econometric evidence on the determinants of female labour force participation and employability for both male and female prime-age individuals and youths using household survey data. Policy recommendations are discussed in Section 3 and summarised in Box 3.

2. Background and main issues

Trends in labour force participation and unemployment

Labour force participation is comparable to the OECD average for prime-age males but is somewhat lower for females (Figure 1). Labour supply increased considerably for prime-age females

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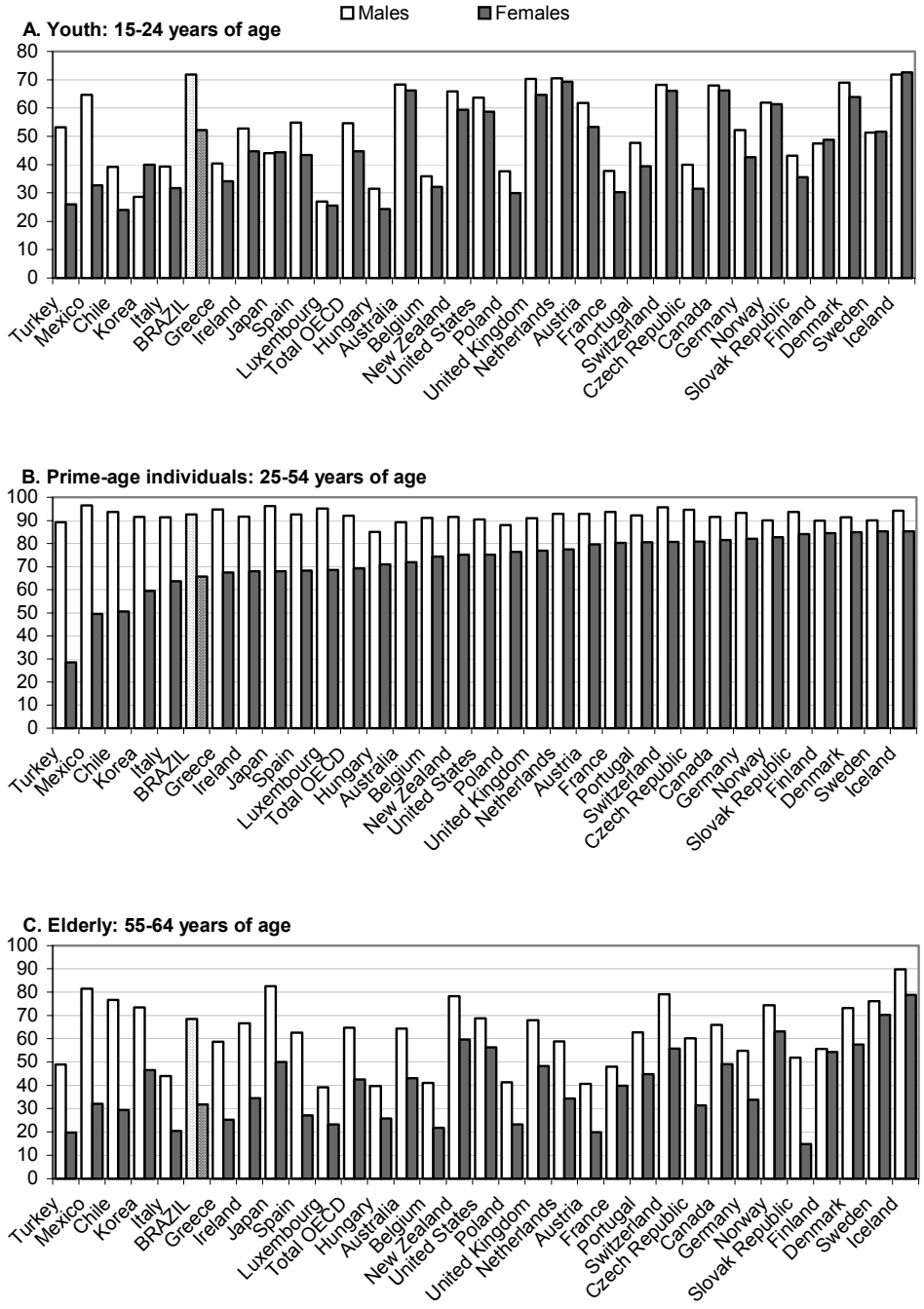
1. This paper is part of the *Economic Survey of Brazil*, published in November 2006 under the authority of the Secretary General of the OECD and discussed at the Economic and Development Review Committee (EDRC) on 10 October 2006. Luiz de Mello is Head of the Brazil/South America Desk of the Economics Department of the OECD and Naércio Menezes Filho and Luiz G. Scorzafave are Professors at the University of São Paulo, Brazil. The authors want to thank, without implicating, Andrew Dean, David Grubb, Peter Jarrett, Val Koromzay, Diego Moccero and Anders Reutersward for helpful comments and discussions. Special thanks are due to Anne Legendre for research assistance and Mee-Lan Frank for excellent technical assistance.

Figure 1. **Labour force participation by age and gender: Brazil, Chile and OECD countries, 2004**
Countries ranked by participation rate for prime-age females



Source: IBGE (National Household Survey, PNAD), OECD (Labour Force Statistics) and OECD calculations.

during 1982-2004, more than compensating for the decline in participation for prime-age males (Table 1).[2] Participation remains high in comparison to the OECD average for youths aged 15-24, despite a uniform decline for both males and females aged 15-19 over time, especially since 1992, reflecting the rapid increase in secondary school enrolment that has taken place since the 1990s. Several countries in the OECD area have managed to combine high participation rates among the young with high educational enrolment. This is likely to occur in Brazil as enrolment increases further because many youths who will wish to remain at school may need to work to finance their studies. Among the elderly, participation is comparable to the OECD average for males but is slightly lower for females. The introduction of age-related means-tested income transfers in 1993 – RMV and LOAS, discussed in OECD (2005) – is likely to be an explanatory factor for declining participation among the elderly.

Cohort effects are particularly strong in female labour force participation and have contributed to closing the gender gap in labour supply over the years. Participation peaks at 35-39 years of age and has increased considerably for the younger cohorts, although they are delaying entry into the labour market, as in the case of males, for whom participation rises sharply after 20 years of age, peaks at 30-34 years and then begins to fall after 44 years of age for all cohorts (Figure 2). Women in the 20-24 age group had a higher participation rate in 2002 than previous cohorts at that age. As in the OECD area, the increase in female participation across generations reflects changing social norms and family patterns, in addition to educational attainment. For males, by contrast, participation rates have tended to vary much less across cohorts. In any case, the increment in female participation rates in successive cohorts is losing momentum. The current gender gap in labour supply is therefore likely to persist, albeit at a lower level, leading to a continued under-utilisation of women's skills.

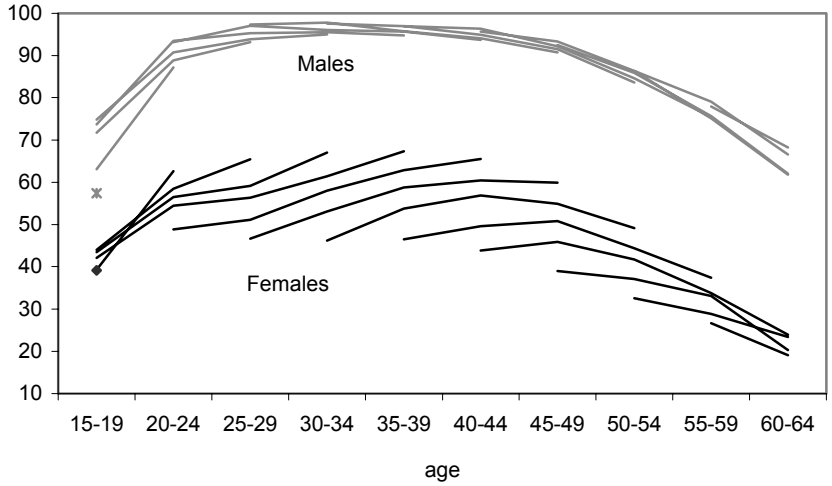
Table 1. **Labour force participation, employment and unemployment by age and gender, 1982, 1992 and 2004**
In per cent

	Participation rate			Employment rate			Unemployment rate		
	1982	1992	2004	1982	1992	2004	1982	1992	2004
Males									
15-24	82.5	80.6	71.8	75.5	72.2	61.0	8.4	10.5	15.0
of which: 15-19	73.7	71.7	57.0	66.8	63.2	46.2	9.3	11.9	19.0
25-54	95.3	94.2	92.6	92.7	90.3	88.1	2.7	4.2	4.8
55-64	73.8	71.5	68.5	72.7	69.8	66.0	1.5	2.4	3.7
65+	35.4	36.7	28.8	35.2	36.3	28.2	0.7	1.2	2.2
15+	85.3	84.1	79.5	81.6	79.3	73.8	4.4	5.7	7.2
Females									
15-24	45.2	49.9	52.2	40.2	41.9	39.3	11.1	16.2	24.7
of which: 15-19	42.1	44.1	39.4	37.1	35.9	27.0	11.8	18.5	31.4
25-54	43.6	55.1	65.6	41.9	51.4	59.4	4.1	6.7	9.4
55-64	22.7	28.5	31.8	22.5	28.0	30.5	1.0	1.9	4.1
65+	7.3	9.5	8.0	7.3	9.4	7.8	0.6	1.8	1.5
15+	39.8	47.4	53.3	37.3	43.1	46.5	6.4	9.1	12.8

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

2. The data used to calculate the labour market indicators in this paper are available from the National Household Survey (PNAD). PNAD is a yearly survey covering about 300 000 individuals aged 15-64 throughout the country. The statistics reported in this paper refer to 1982, 1987, 1992, 1997 and 2004. A new methodology used from 1992 broadened the concept of labour market participation, but adjustments have been made to ensure comparability over time.

Figure 2. **Labour force participation: Cohort effects**[1]
In per cent

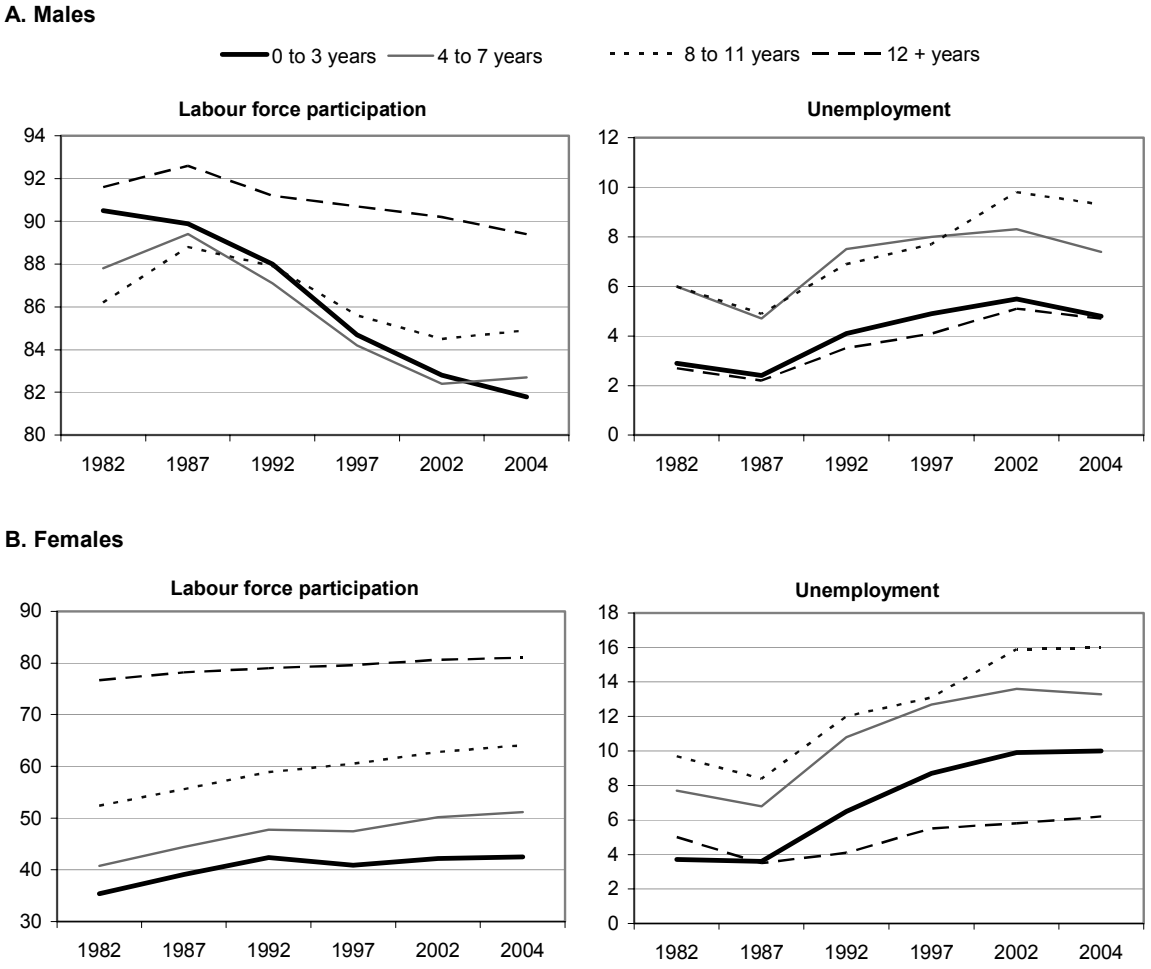


1. Each line in the figure depicts the evolution of a given cohort's participation rate in 5 different waves of PNAD (1982, 1987, 1992, 1997 and 2002). For example, the line that starts at age 30-34 and ends at age 50-54 depicts the participation rate of the cohort born during 1948-52, which is aged 30-34 in 1982 and 50-54 in 2002.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Educational attainment is an important determinant of labour force participation. Female participation has increased particularly fast for those individuals with intermediate levels of education (8-11 years), especially since 1992 (Figure 3). The modest increase in participation for the best educated females reflects in part their already high participation rates throughout the period 1982-2004. As in the OECD area, the gender gap in educational attainment is narrowing (OECD, 2002). By contrast, in the case of males, the fall in participation has been the sharpest for the least educated individuals, especially among the younger cohorts. Although the gender participation gap is widest for the least educated individuals, there are strong cohort effects for females in the 30-49 age bracket, with a marked increase in participation (Figure 4). Although it could be argued that the high correlation between labour force participation and educational attainment might exacerbate income inequality, which is already high in Brazil, empirical evidence is mixed. The income share of low-income females rose faster than that of their middle-income counterparts in the 1980s and 1990s, but this increase has not resulted in an appreciable fall in earnings inequality largely because of the concomitant increase in participation of higher-income, better educated females (Scorzafave and Menezes Filho, 2005).

Figure 3. **Labour force participation and unemployment rates by gender and years of education, 1982-2004**
In per cent, population aged 15-64

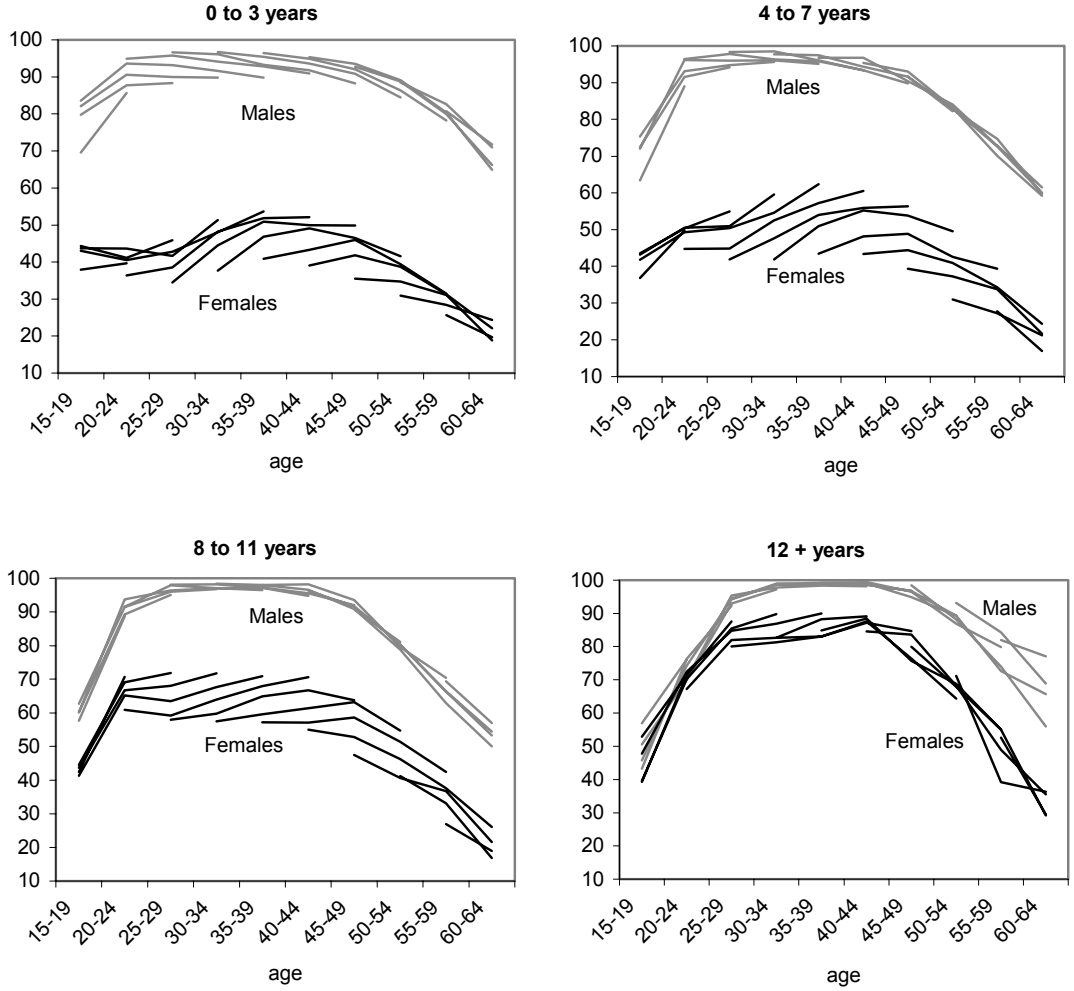


Source: IBGE (National Household Survey, PNAD) and OECD calculations.

As in the case of labour force participation, cohort effects are strong for female unemployment. The unemployment rate has risen more steeply for the younger generations, especially for less educated females (Figure 5). The trend towards rising youth unemployment relative to the unemployment rate of prime-age workers has also taken place in most OECD countries since the early-to-mid 1990s. This means that, although many youths are delaying entry into the labour market in order to spend more time in education, others are not studying and are finding it difficult to find a job.[3] In the case of Brazil, the share of youths aged 15-19 who are studying and that of older youths, aged 20-24, who continue to study while working almost doubled during 1982-2004 (Table 2).

3. Fernandes and Picchetti (1999) estimated the incidence of unemployment and inactivity in Brazilian metropolitan regions using a multinomial logit model based on the 1995 PNAD. The authors found an inverted U-shaped relation between education and unemployment, peaking at around 9 years of schooling. They also found a negative relationship between schooling and inactivity and that the probability of being unemployed rises with age non-linearly, with a maximum estimated probability at around 30 years of age.

Figure 4. **Labour force participation: Cohort effects by years of education**[1]
In per cent



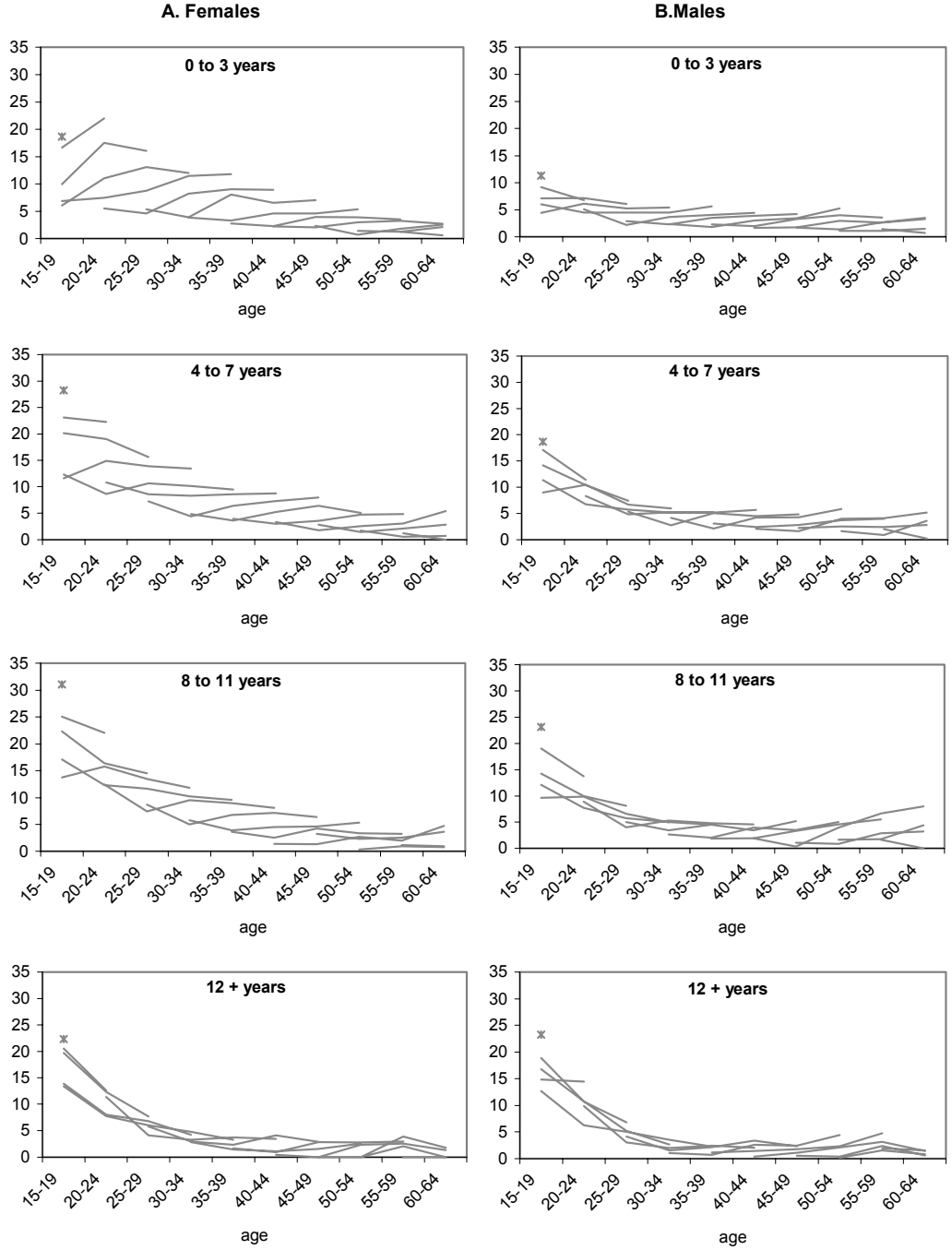
1. Each line in the figure depicts the evolution of a given cohort's participation rate in 5 different waves of PNAD (1982, 1987, 1992, 1997 and 2002). For example, the line that starts at age 30-34 and ends at age 50-54 depicts the participation rate of the cohort born during 1948-52, which is aged 30-34 in 1982 and 50-54 in 2002.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

The average years of schooling of working youths has therefore increased, especially since 1997 (Figure 6). But the fact that about 15% of youths aged 15-19 and 25% of those aged 20-24 are not studying or working, despite some improvement over time, is worrisome, especially against the background of rising unemployment. Moreover, parents' educational attainment is among the main determinants of youths' decisions on the allocation of time between school and work.[4] This suggests that policy action in this area has strong intergenerational effects: it affects not only the current generation directly but also future ones through the effects of parental education on children's educational attainment.

4. Menezes Filho, Picchetti and Fernandes (2000) show that the increase in educational attainment of youths between 16 and 17 years of age in the 1990s was strongest among the children of less educated mothers (0-3 years of schooling). But these youths are also likely to work while studying. Empirical evidence suggests that the probability of "studying and not working" is only 25% for youths with illiterate parents, as opposed to 80% for those whose parents have higher education for Latin America as a whole.

Figure 5. **Unemployment: Cohort effects by years of education**[1]
In per cent



1. Each line in the figure depicts the evolution of a given cohort's participation rate in 5 different waves of PNAD (1982, 1987, 1992, 1997 and 2002). For example, the line that starts at age 30-34 and ends at age 50-54 depicts the participation rate of the cohort born during 1948-52, which is aged 30-34 in 1982 and 50-54 in 2002.

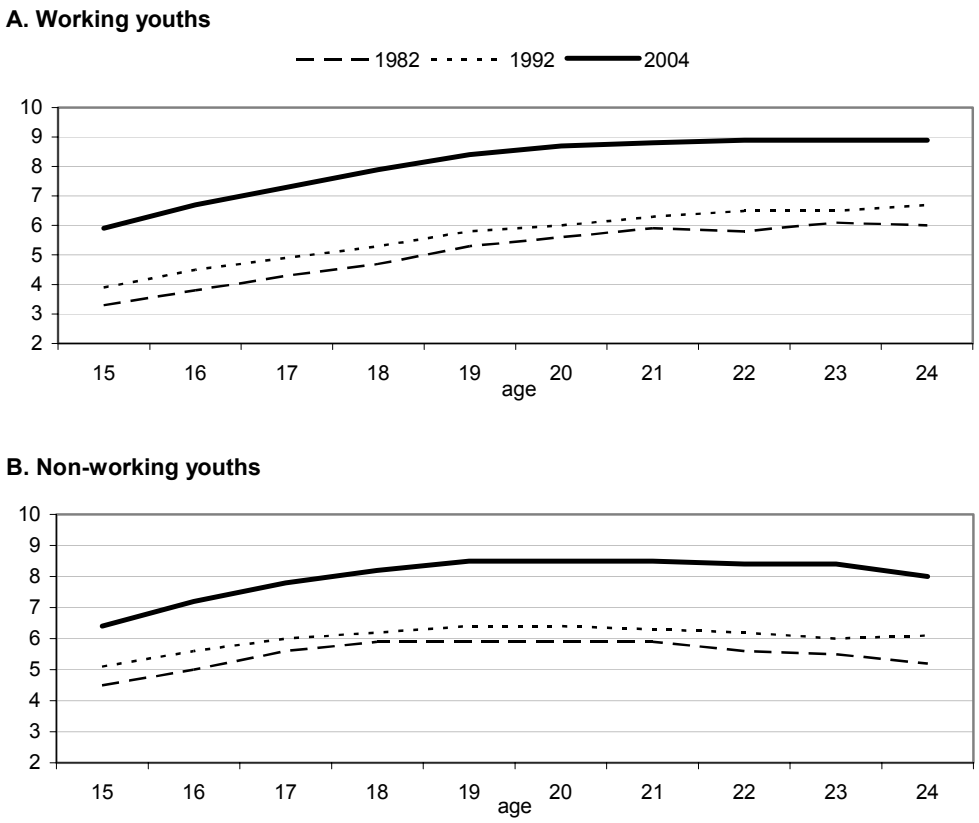
Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table 2. **Distribution of youths by education and employment status, 1982-2004**
In per cent of youths in each age group

	1982	1987	1992	1997	2004
15-19 years					
Not studying or working	20.4	18.7	18.5	16.3	14.7
Not studying but working	37.6	38.3	30.8	20.6	16.5
Studying and not working	27.7	27.6	32.0	41.9	48.5
Studying and working	14.3	15.5	18.8	21.1	20.2
20-24 years					
Not studying or working	29.6	26.3	27.7	26.7	25.0
Not studying but working	55.8	59.0	55.4	51.4	49.6
Studying and not working	6.0	5.8	6.9	8.9	10.8
Studying and working	8.6	8.8	10.0	13.0	14.6

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Figure 6. **Average years of education by age: Youths aged 15-24, 1982-2004**



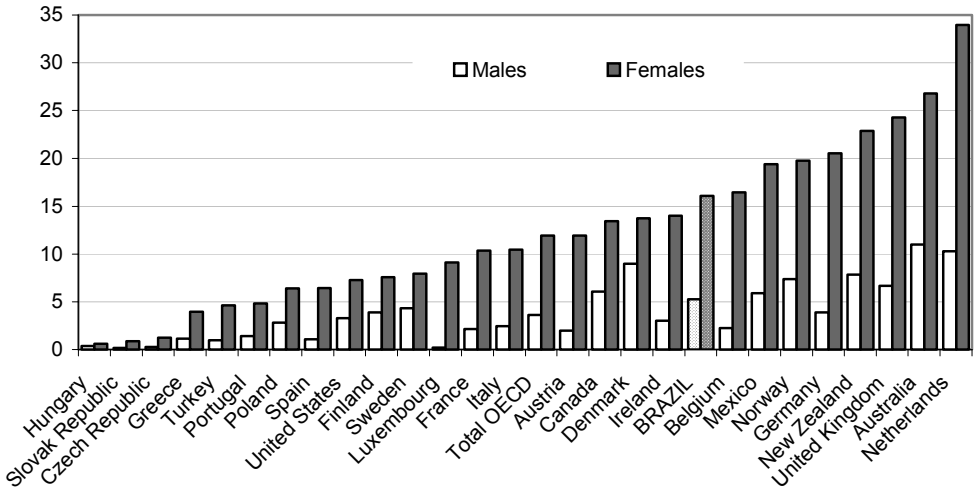
Source: IBGE (National Household Survey, PNAD) and OECD calculations.

The gender gap in labour supply is accentuated by a higher prevalence of part-time work among females. About 17.5% of employed women worked less than 20 hours per week in 2004, against 13.5% in 1982. The corresponding ratios for men were 3.3% in 1982 and 6.4% in 2004. As a result, females work on average 7-8 hours per week less than males (44 hours for males versus 37.2 hours for females in 2004). The incidence of part-time work in Brazil is comparatively high for females by OECD standards

(Figure 7), suggesting that there may be a clear preference for it as a means of reconciling professional and household responsibilities.[5] Alternatively, constraints on the allocation of working time may deter those women who are willing to work on a full-time basis from doing so. In any case, the higher incidence of part-time work among females exacerbates the gender gap in total employment.

Educational attainment is a powerful determinant of labour supply, as noted above, but also of employability in the formal sector. This is important because labour informality is pervasive in Brazil: despite high participation rates, own-account workers and those without social security coverage made up approximately 48% of the employed population in 2005 (based on the Monthly Employment Survey, PME, which focuses on the country's metropolitan areas). This ratio increased steadily over the 1990s (OECD, 2006) but appears to have been trending down since late 2003. A heavy tax burden on labour and restrictiveness in employment protection legislation (EPL) are considered the usual culprits for labour informality in the OECD area. But it is also possible that informality stems from self-selection, in the sense that workers expect higher earnings in the informal sector and then choose to remain in that sector, despite the benefits, including social security coverage and severance/unemployment insurance, to which they are entitled in the formal sector (Box 1). For many workers, however, especially the least educated, there may be no alternative to informality, especially as the premium placed by the labour market on formal educational attainment increases. Dealing with informality calls for policy action not only to reduce duality in the labour market but also to ensure the fiscal sustainability of the social security system through the broadening of the base for social security contributions, as discussed in OECD (2006), Chapters 1 and 2.

Figure 7. **Part-time work by gender: Brazil and OECD countries, 2004**
Individuals aged 15-64 years working less than 20 hours per week, in %



Source: IBGE (National Household Survey, PNAD), OECD (Labour Force Statistics) and OECD calculations.

5. Part-time rates are not change significantly different for prime-age individuals (25-64 years of age), suggesting that part-time work is not confined to youths as a means of reconciling work and study responsibilities.

Box 1. **Labour informality: Self selection or market segmentation?**

Empirical evidence on the nature of labour market informality is far from conclusive.[1] The conventional metric for labour informality in Brazil is social security coverage. Own-account workers are also often treated as informal in empirical analysis. Among the early studies, Barros *et al*. (1992) find that the transition from formality to informality implies wage losses and vice versa, which suggests the presence of barriers to entry into the formal sector, characterising market segmentation. Carneiro and Henley (2001) find evidence of self-selection for workers in the informal sector – suggesting that these workers choose not to have social security coverage – but not for those in the formal sector. Tanuri-Pianto and Pianto (2002) show that the formal-informal earnings gap is higher at the bottom of the earnings distribution and that this gap cannot be explained by differences in worker characteristics. This evidence is suggestive of market segmentation. On the other hand, the smaller earnings gap for the better-off is due almost exclusively to differences in individual attributes, reinforcing the hypothesis of self-selection at the top end of the earnings distribution.

The evidence reported more recently by Soares (2004b) uses a special issue of the National Household Survey (PNAD) in the 1990s which introduced a question about whether informal-sector workers would like to obtain a job in the formal sector.[2] About 70% of interviewees answered that they would like to switch to the formal sector. The empirical results suggest that the distinction between market segmentation and self-selection is nuanced and that education remains an essential determinant of a worker's desire for a formal-sector job and his/her probability to be offered one. Less educated workers tend to be more likely to "queue" for a formal-sector job but have a lower probability of being offered one. Non-whites, females and new entrants are among the groups that are least likely to be "picked from the queue", once they have joined it. Importantly, a spell in the informal sector tends to severely jeopardise a worker's ability to be subsequently offered a formal-sector job, probably owing to the fact that employers interpret these spells as carrying information about the worker's productivity. The experience of the OECD countries also suggests that informality adversely affects formal employment prospects (OECD, 2004).

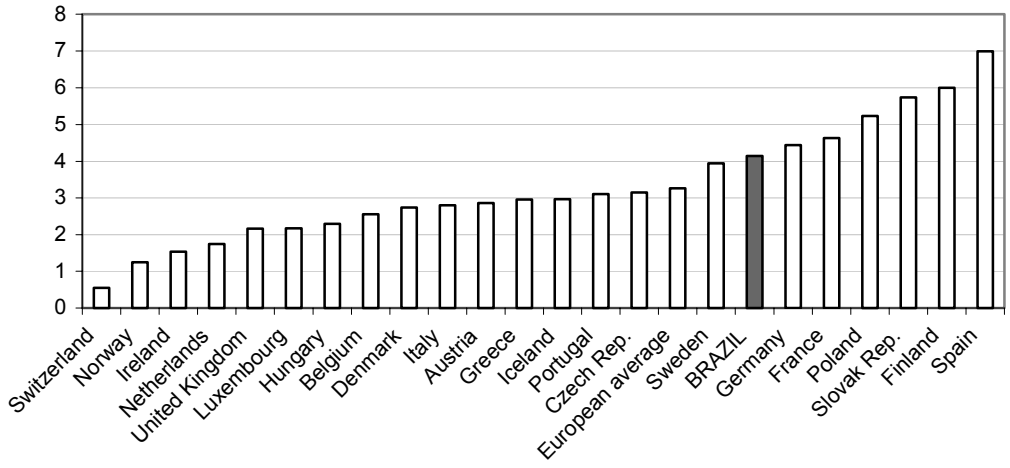
1. See Soares (2004a) and Ulyssea (2005) for surveys of the empirical literature.

2. This allows for dealing more effectively with the identification and exclusion problems that make empirical analysis difficult in this area. The identification problem arises because one needs to distinguish the reasons why an informal-sector worker might want to queue for a formal-sector job from the determinants of actually obtaining one. The exclusion problem refers to the need to explain the determinants of wages that do not affect a worker's probability to queue for a formal-sector job and to be offered one.

Labour turnover is high in the formal sector by OECD standards (Figure 8), especially for youths.[6] Turnover is probably higher in the informal sector, but not directly observable. In many OECD countries, high labour turnover is due to EPL stringency for regular contracts combined with flexibility for fixed-term and temporary-work contracts. But this is not the case in Brazil, as discussed in OECD (2005a, 2006). Job precariousness is a usual culprit, but high labour turnover and informality are also due to some extent to policy design in the case of Brazil because of the incentives workers face to withdraw their FGTS (severance insurance mechanism) account balances by negotiating separation with employers and

6. Based on PME data during 1983-2002, Flori (2003) concludes that the duration of unemployment spells is similar for youths and prime-age individuals, but employment spells are shorter for youths, resulting in higher turnover.

Figure 8. **Labour turnover:[1] Brazil and European countries, 2005**
In per cent



1. Calculated as min (admissions, separations) divided by employment and refers to the second quarter of 2005 for all countries.

Source: Ministry of Employment and Labour (CAGED Database) and European Labour Force Survey.

claiming what are voluntary quits to be unfair dismissals. On the one hand, individual FGTS balances are remunerated at below-market rates of return (OECD, 2006; Chapter 1), which reduces the opportunity cost of withdrawals for employees. On the other, the value of the severance indemnity due in the event of unfair dismissal is often negotiated between employees and employers, weakening the disincentive facing employers to terminate a contract while claiming unfair dismissal so that the employee can withdraw his/her account balances. Negotiated separations therefore provide employees with short-term gains (*i.e.* the severance indemnity plus the outstanding FGTS account balance) to the detriment of longer-term benefits related to career advancement and the accumulation of job-specific human capital. In this respect, a preference for negotiated separations suggests that workers perceive the returns to seniority and social security coverage to be low.

Returns and determinants of earnings

The increase in labour force participation over time is likely to be motivated in part by rising returns to education. Estimates vary depending on the methodology used, but returns to schooling are estimated at about 10% for each additional year of education for employed workers (Ueda and Hoffmann, 2002). They are also somewhat higher for females than males (Silva and Kassouf, 2000), for individuals working in the primary sector than in the secondary (manufacturing and construction) sector (Soares and Gonzaga, 1999), and for those living in urban areas than their rural counterparts (Loureiro and Carneiro, 2001). Returns also depend on the quality of education: they are lower for workers educated in states where formal education is deemed to be of lower quality, measured for example by higher pupil-teacher ratios (Arias *et al.*, 2002).

The increase in returns to education has been noticeable for individuals who have attained upper-secondary and higher education, especially since 1992, a period that has been marked by trade liberalisation and pro-competition reforms (Table 3). Average earnings rose for those workers with 12+ years of education relative to their less educated counterparts. But the narrowing of the earnings gap for less educated workers does not imply that returns to education are falling. This is due

Table 3. **Returns to education and relative labour supply by gender, 1982-2004**
In per cent

	1982	1987	1992	1997	2004
			Males		
Relative earnings[1]					
4-7 to 0-3 years of education	191.4	178.0	170.2	169.0	163.9
8-11 to 4-7 years of education	192.4	185.5	174.1	183.1	159.7
12+ to 8-11 years of education	235.9	244.7	257.1	271.2	306.5
Relative labour supply					
4-7 to 0-3 years of education	68.5	86.2	93.4	107.5	125.8
8-11 to 4-7 years of education	48.5	61.9	77.4	87.0	124.5
12+ to 8-11 years of education	50.7	45.2	35.5	35.3	31.2
			Females		
Relative earnings[1]					
4-7 to 0-3 years of education	171.0	160.9	147.2	135.7	132.4
8-11 to 4-7 years of education	219.2	202.7	188.9	185.8	157.3
12+ to 8-11 years of education	204.7	239.0	229.0	267.9	285.8
Relative labour supply					
4-7 to 0-3 years of education	62.9	80.1	90.7	110.9	137.6
8-11 to 4-7 years of education	50.6	63.5	78.4	93.8	135.5
12+ to 8-11 years of education	40.0	39.5	37.2	35.3	35.7

1. Defined by the ratio of average monthly earnings to hours worked for prime-age workers for each group distinguished by educational attainment.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

essentially to a supply effect. Empirical evidence suggests that trade liberalisation was associated with a rising skill premium, with demand for skilled labour increasing faster in the sectors that experienced larger increases in import penetration (Pavcnik *et al.*, 2003; Sachsida *et al.*, 2005). Because the supply of skilled labour also rose, given the increase in the labour force's average years of schooling, the structural reforms of the 1990s are associated with a reduction in the earnings gap between workers who have completed only primary education and those holding high school degrees (Gonzaga *et al.*, 2005). Moreover, there is additional evidence that this supply effect is reducing the earnings gap within the group of individuals with 12+ years of education between high-school leavers and those with higher education (Ferreira, 2004).

Educational attainment, rather than experience, has become more highly rewarded over time. The increase in the returns to formal education is consistent with a progressive estimated reduction in returns to experience, suggesting that formal education has become more important than seniority in shaping workers' earnings capacity, particularly for the lowest-paid workers (Arabsheibani *et al.*, 2003). This is also the case in the informal sector and across gender and racial lines. Earnings discrepancies between formal- and informal-sector workers seem to depend on skills rather than on whether the worker has social security coverage or not (Menezes Filho *et al.*, 2004), despite the gradual decline over time in the share of workers employed formally, at least until 2003 and especially in the metropolitan areas. Skill-adjusted earnings differentials have also narrowed over time between non-whites and whites for the younger cohorts. Empirical evidence suggests that differences in skills account for most of the earnings differential between low-paid whites and non-whites (Arias *et al.*, 2002; Campante *et al.*, 2004; Reis and Crespo, 2005). Moreover, the earnings gap between males and females is closing over time, reflecting the increase in female educational attainment and the ensuing increase in female participation in better-paid occupations.

There is limited empirical assessment of the returns to labour training and vocational education. The absence of a national system of skills certification currently in place prevents the marketability of skills acquired through labour training on or off the job, making private returns difficult to quantify. While

Brazil's educational system places little emphasis on vocational education, labour training services are provided predominantly in a decentralised manner through a multitude of sector-specific non-governmental institutions – the "S" system – financed through para-fiscal levies on enterprise payroll (**Box 2**). However, the fact that Brazil's labour turnover rate is high discourages investment on the part of employers in labour training and consequently the accumulation of productivity-enhancing human capital through on-the-job training. Incentives are therefore also weak for employees to acquire job-specific qualifications in expectation of seniority gains.

Box 2. **Labour training, skills certification and job placement**

Labour training policy is set by the Ministry of Labour. Recent initiatives include the creation of vocational training centres (CEPFPs) and the launching of a national labour training programme (*Programa Nacional de Qualificação*, PNQ) in 2003 to replace PLANFOR, created in 1995. PNQ targets vulnerable groups, including the unemployed, low-skill workers and school-leavers, and provides training and skills certification. These programmes are funded primarily by FAT, the unemployment insurance fund. About 140 thousand people benefited on average from labour training provided through PNQ in 2003-04.

Labour training is delivered primarily at the sectoral level by the non-governmental organisations that are part of the "S" system (Table 4). Services are financed through levies on enterprise payroll, which are collected through the social security system and allocated in full to the sectoral service providers. These levies yielded approximately 0.25-0.28% of GDP in revenue during 2003-05.

The combination of publicly funded labour training and activation policies is relatively recent in Brazil. An employment subsidy programme (PNPE, *Programa Nacional de Estímulo ao Primeiro Emprego de Jovens*) was introduced in 2003 for low-skill youths aged 16-24 years with disadvantaged backgrounds. The subsidy is equivalent to approximately one minimum wage per year per vacancy filled through a job placement institution. Approximately 240 thousand youths have benefited from the programme.[1]

Skills certification is a recent endeavour. A certification programme was implemented in 2003 targeting low-income, low-skill individuals, as well as the unemployed, as a means of improving their employability. Currently there are two pilot programmes in industry in the metropolitan area of São Paulo, but a national skills certification system is not yet in place.

Job placement is carried out under the purview of SINE (*Serviço Nacional de Emprego*), in place since 1976, through local job centres and non-profit organisations. More recently, SINE has been targeting vulnerable groups, including youths, women and individuals aged 40 years and above. Placement rates are nevertheless low, at about 20% of job seekers.

Table 4. **The "S" system: An overview**[1]

Institution (sector)	Area of activity/financing	Output
SENAI (industry, including telecommunications and transport), created in 1942, administered by the National Confederation of Industry (CNI)	– Vocational training, technical and technological assistance. – Financed by a 1% levy on enterprise payroll.	2.8 million workers trained per year in a network of 726 training units.
SENAC (commerce), created in 1946, administered by the National Confederation of Commerce (CNC)	– Vocational training open to society as a whole. – Financed by 1.5% levy on enterprise payroll.	1.9 million workers trained in a network of 663 schools and 50 mobile units distributed throughout the country.
SENAR (rural training), created in 1991, linked to the National Confederation of Agriculture	– Rural vocational training and social inclusion. – Financed by 2.5% levy on enterprise payroll.	17 thousand rural workers have benefited from the Institute's Literacy Programme.
SENAT (transport), created in 1993, administrated by the National Confederation of Transport (NCT)	– Vocational training. – Financed by 1% levy on enterprise payroll (social security contribution in the case of own-account workers).	…
SEBRAE (industry and commerce)	– Training for entrepreneurs in SMEs. – Financed by 0.3% of funds of SENAI, SESI, SENAC and SESC.	…

1. Excludes the other institutions linked to the "S" system for which labour training is not the main area of activity (*i.e.* SESC, SEST, SESI, INCRA, DPC and *Fundo Aeroviário*).

Source: OECD.

1. See Andrade (2005) for more information.

3. Policy recommendations

The main issue arising from the analysis of trends in labour supply and unemployment is the combination of falling participation among youths as a result of rising school enrolment, coupled with increasing unemployment, high labour turnover and persistent informality, especially for the less educated. To a certain extent, these trends are closely inter-twined: unemployment may discourage labour force participation and prevent access to the formal sector, and an increase in labour supply may result in higher unemployment and informality if labour demand does not rise in tandem or if the qualifications of potential entrants do not match market requirements. Brazil's key policy challenge in this area is therefore to improve the use of labour inputs through human capital accumulation on and off the job. Because female participation is closely correlated with educational attainment, as in the OECD area, policies that foster human capital accumulation for the population as a whole would contribute to reducing the remaining gender gap in employment. Moreover, adding a hitherto untapped supply of skills to the labour force would contribute to raising the economy's potential growth.

There is compelling empirical evidence that education is a powerful determinant of both labour force participation and employability (Annex A1). Employment prospects appear to improve for males only for the better educated (eight years of education or more), and the labour market appears to have become increasingly discerning over time on the basis of education in the case of females. As regards youths, by contrast, a rising education premium appears to delay entry into the labour market, except for the best educated females. This suggests that even workers with a good initial education increasingly require access to continuing training if they are to improve their employability. Employment prospects have deteriorated for prime-age individuals and youths living in urban/metropolitan areas, an issue which raises considerable social concern.

Strengthening the framework conditions for labour utilisation

Macroeconomic stability is an important framework condition for improving labour market performance. To the extent that a stable macroeconomy is associated with lower real interest rates, it encourages investment and physical capital accumulation, and creates incentives for firms to seek productivity gains through innovation. Labour productivity and employment are therefore likely to rise. At the same time, greater economic resilience to shocks makes business cycles less pronounced, reducing the scope for hysteresis-type mechanisms that contribute to turning cyclical into structural unemployment, with a detrimental impact on labour utilisation. This is important because long-term unemployment (over 12 months) has risen over time in Brazil, affecting about one-third of the unemployed in the metropolitan region of São Paulo in 2003 compared with only 15% in 1991.

Labour market performance can also be enhanced through further pro-competition reform. The experience of OECD countries suggests that the removal of regulations that impede entry and expansion of new firms is associated with better employment outcomes, especially when it is complemented by other demand-side reforms, such as the easing of constraints imposed by employment protection legislation. In Brazil, competition-enhancing deregulation in product markets has taken place in tandem with trade and investment liberalisation, as in many countries in the OECD area. Trade and investment liberalisation has been associated with productivity gains in the manufacturing sector, as discussed in OECD (2006), Chapter 1. Further reform could therefore contribute to job creation, especially when broad activation policies are put in place to mitigate the job displacement effect that pro-competition reform may create in some sectors.

Facilitating female labour force participation

Public finances permitting, consideration should be given to facilitating access to child care and pre-school education so as to encourage female labour supply and close the remaining participation gap with respect to males. Mothers with young children may opt for part-time work as a means of reconciling household and work responsibilities, and the share of females working less than 20 hours per week is already comparatively high in Brazil in relation to the OECD area. But a number of these part-timers may want to work longer hours. The experience of most OECD countries is that preferences for female participation, in particular among couples with young children, are much higher than actual female labour supply.[7] Many working mothers currently rely on help from parents and relatives for child care, but this is likely to change when the younger cohorts grow older because of their higher participation rates. It will therefore be important to increase the supply of affordable child care, because the empirical evidence reported in Annex A1 suggests that the disincentive effect on female labour supply and employability associated with young children increased during 1982-2004. By the same token, the experience of OECD countries suggests that the gender gap in employment widens as the number of children in the household unit increases. Because female employability also depends strongly on educational attainment, the constraint imposed by a lack of affordable child care services may affect the less-educated individuals disproportionately.

A scarcity of publicly funded pre-school education is an additional hindrance to female labour force participation. Only about 64% of children aged 4-6 are engaged in pre-school education, whereas only 12% of those aged 0-3 are in child care. Mothers with younger children, especially those in low-paid jobs, often find it prohibitive to work while having to pay for these services out of pocket. In this regard, the recent initiative to extend the financing mechanisms currently in place for primary and lower-secondary education to pre-school education is a step in the direction of increasing the supply of publicly funded services. It is also important from the point of view of boosting educational attainment, because international experience suggests that access to early childhood education can improve school outcomes later in life. Another consideration is that the tax system of several OECD countries often poses an additional constraint on female labour force participation to the extent that it penalises second earners, who are most often women. But this is not the case in Brazil, where the tax system is more neutral, because spouses file their income tax returns separately and there is no allowance for dependent spouses, the loss of which would contribute to increasing the effective tax rate on second earners relative to that on single individuals.

The length of the school day, which is currently short, may also discourage women from taking up a full-time job. Most public and private schools have two shifts per day, morning and afternoon. A move from part- to full-time schooling would remove this obstacle, although it would require concerted policy action among all levels of government for financing the incremental service delivery costs. In any case, gradualism would be recommended for implementation. Part-time schooling is commonplace in Latin America, other than Chile, where full-day schooling is now in place following three years of gradual implementation (OECD, 2005b).

Options for reducing formal unemployment

Properly designed active labour market policies (ALMPs) can be used to tackle unemployment by enhancing work experience and the skills of those groups with the least stable employment histories, such as youths, women and the less educated. Activation programmes differ from conventional public employment services because they make participation in training and job-creation programmes, for example, compulsory for targeted groups, especially recipients of unemployment insurance and some

7. See Jaumotte (2003) for empirical evidence for OECD countries.

social assistance benefits. In practice, however, the cost-effectiveness of ALMPs has been found to differ significantly between different types of programmes. In particular, the outcomes of public job creation and wage subsidy schemes need to be assessed against the fact that these programmes often entail large dead-weight losses and substitution effects, and create costs to the budget. Brazil's experience with activation programmes is relatively recent. Federal programmes such as PLANFOR/PNQ and PNPE (Box 2) focus on training for the unemployed and vulnerable segments of the labour market. Their budgets are small in relation to total FAT-funded programmes, which include the Salary Bonus and unemployment insurance. Experience with recent initiatives, such as the Youth Consortia (*Consórcios Sociais da Juventude*), which is a pilot programme combining labour training with income support conditional on engagement in community care activities, seems promising, and their impact on employment for the targeted population should be fully assessed.

The option of making it compulsory for unemployment-benefit recipients to participate in an activation scheme could be considered. It is essential that employment services ensure that recipients look for jobs while engaged in an activation scheme. In general, the introduction of compulsory activation has been justified in a few OECD member countries to prevent a loss of skills or motivation as a result of long-term unemployment. The duration of unemployment insurance in Brazil – limited to five months – does not seem to create disincentives for activation, as in many OECD countries. However, the unemployment benefit payments were 150% of the minimum wage on average during 1994-2004, which may be high in relation to the median entry salary. The experience of OECD countries where activation programmes have been assessed over extended periods of time suggests that long-term vocational training programmes can considerably improve participants' employability (OECD, 2005c). But, when evaluating the appropriateness of these initiatives, it is important to consider that countries with limited resources for activation should give priority to other job-search activities, which could be made mandatory for benefit recipients.

Discouraging early retirement and disability/sickness inactivity

The 1998 social security reform introduced parametric adjustments to discourage early retirement (OECD, 2005a, 2006). In particular, a new methodology for calculating old-age pensions made the replacement rate dependent on the length of contributions. As a result of these reforms, the average retirement age (for length-of-contribution pensions) rose from about 49 years in 1998 to just over 53 years in 2004. But it remains low by OECD standards, reflecting to a large extent the absence of a minimum retirement age for private-sector workers retiring on the basis of length of contribution, which runs counter to international trends. The pervasiveness of early retirement is worrisome because Brazil's advantage relative to the OECD area related to its still young population is offset by the fact that life expectancy at 60 years of age is comparable to the OECD average, putting a heavy burden on the budget at a time when the country should be preparing to deal with population ageing. The introduction of a minimum retirement age for private-sector workers is therefore essential not only from the vantage point of making better use of labour resources, but also for ensuring the fiscal sustainability of the pension system (discussed above). Because about 28% of retirees aged 64 currently work, options for combining pensions with income from work could be envisaged to strengthen incentives for increasing participation among older workers, especially for males for whom participation is falling steadily.

There has been a surge in recent years in disability and sickness benefits, which to a large extent reflects administrative weaknesses. The contracting-out of assessment of compliance with the eligibility requirements for disability/sickness benefits is alleged to have lowered monitoring standards. Administrative efforts have been made to address this problem, including through a census of beneficiaries and the introduction of automatic cessation of sickness benefits according to estimated rehabilitation time. In addition to improvements in the administration of the social security system, there are demand-side policy options that may be considered for discouraging abuse. For example, the Netherlands introduced

experience rating for employers, whereby contributions are based on past recourse to the system, as well as stronger requirements for both employers and employees to engage in reintegration efforts for people on long-term sickness benefits (Brandt *et al.*, 2005). A similar arrangement could be considered in Brazil.

Dealing with labour informality

Dealing with informality requires policy actions that go beyond the labour market. The tax burden on labour (including payroll taxes and employers' social security contributions) is high in Brazil, driving a wedge between the marginal productivity of labour and the reward for work. This is particularly detrimental to employability in the formal sector in the case of less educated individuals, who are most likely to work informally. An option for making social insurance affordable to those with low incomes would be, budget conditions permitting, to target exonerations of employers' social security contributions on low-paid workers. This would lower the cost of employing them without reducing their wages. In this regard, the government has recently allowed the employer's social security contribution due on the first minimum wage paid to domestic workers to be deductible from his/her personal income tax liabilities. This measure creates short-run costs for the budget associated with a reduction in contribution rates, but these costs would likely be compensated by the increase in the pool of contributors through a reduction in informality. Average direct tax wedges on very low labour income have trended down in the OECD area as a result of the introduction or strengthening of explicit "making-work-pay" policies.[8] In any case, at a time of continued need for fiscal adjustment, the cost-effectiveness of these policy options would need to be carefully assessed.

Improvements in detection and enforcement capabilities could be helpful, but options for raising the attractiveness of formal employment are likely to play a crucial role in reducing informality. Eligibility for unemployment and severance insurance (FGTS) is conditional on formal employment, but there are a host of old-age social assistance benefits and pensions for which eligibility does not depend on formal social security coverage. While addressing social demands for an old-age safety net, the lack of formal employment conditionality for these programmes reduces the opportunity cost of informality. Access to publicly funded health care services is universal, hence unconditional on formal labour market status, which also weakens the incentive for formality while undoubtedly serving a social objective. In this respect, the need for fine-tuning the design of social protection programmes in a manner that does not create a disincentive for formal employment should therefore rank high among the authorities' policy priorities in the social area.

The rate of return on individual FGTS balances should be raised. FGTS balances are currently remunerated at a below-market interest rate, which reduces the opportunity cost of informality. But an increase in the rate of return on FGTS balances would also raise the cost of firing borne by employers, because the separation indemnity due to the employee in the event of unfair dismissal is proportional to his/her accumulated FGTS assets. For these reasons, the option of increasing the rate of return on FGTS savings should be complemented by a gradual phasing out of the separation indemnity. By reducing the cost of firing, this measure would contribute to making Brazil's employment protection legislation (EPL) more flexible, while preserving a safety net for the unemployed, because workers who lose their jobs already rely on unemployment insurance and have access to their accumulated FGTS savings. Policy efforts in this area would be consistent with the gradual phasing-out of the existing directed credit mechanisms that are financed through FGTS, such as the housing/mortgage system. Such initiatives would

8. The tax-related incentive for informality depends on the composition of the tax burden at the enterprise level between taxes on labour and on value added. Because labour costs are deducted from output in the calculation of value added, value added-based taxation does not in principle create an incentive to conceal employment.

also underscore the synergies that exist between financial and labour market policies, discussed in OECD (2006).

The reform option recommended above for severance insurance through FGTS would also contribute to reducing labour turnover. But, until the severance indemnity is eliminated, consideration should be given to the option of increasing the share of the indemnity that is deposited into FGTS, instead of being paid directly to the employee. Empirical evidence suggests that the increase in 2001 of the severance indemnity was associated with a reduction in labour turnover (Gonzaga, 2003). The severance indemnity was raised by 10 percentage points to 50% of the accumulated balance, but the increment is now deposited into FGTS rather than being paid directly to the worker. This wedge between the cost of dismissal faced by the employer and the benefit accrued to the employee is thought to have weakened the incentive for negotiated separations.

Making labour training more attractive

The fact that the Brazilian education system does not have separate streams for vocational and general education is a positive pre-condition for building an effective system of lifelong learning. But much more needs to be done to improve vocational education, which is currently neglected, and labour training. Efforts to increase the supply of vocational training while integrating it into upper-secondary education would be welcome. On labour training, policy options include measures to improve information flows and transparency in the training market and well-targeted government co-financing schemes for employers' and employees' investments in training. The funding of labour training through the "S" system could be reformed by introducing greater contestability and competition. This could be achieved by replacing transfers to service providers by vouchers that could be granted to individual workers and redeemed against training received from accredited institutions. Professional counselling should be provided to assist workers in choosing which training to undertake.

Creating a national skills certification system is essential for improving the marketability of labour training and therefore improving the employability of trained workers. Skills certification would therefore also contribute to reducing informality. To the extent that the less educated workers who are currently trapped in the informal sector may acquire marketable skills, they can compensate for a lack of formal educational attainment through labour training. Although pilot certification programmes are currently in place in industry in the metropolitan region of São Paulo, it would be advisable to extend these initiatives to the sectors, such as construction and services, where informality is more widespread, as well as to the poorer regions of the countries, while ensuring that national standards are set and complied with.

Summary of recommendations

This paper's policy recommendations are presented in **Box 3**.

Box 3. **Summary of recommendations: Labour utilisation**

Facilitate female labour force participation

- Improve access to child care and pre-school education.
- Move gradually from part- to full-time schooling.

Reduce unemployment

- Increase focus on activation within the current policy framework.
- Require unemployment benefit recipients to participate in an activation scheme after some time has elapsed.

Discourage early retirement and disability/sickness inactivity

- Pursue further pension reform, as discussed in OECD (2006).
- Improve the monitoring of disability/sickness benefit concessions.

Tackle labour informality

- Reduce social security contributions for low-paid workers.
- Reduce the incentives for negotiated separation by raising the rate of return on FGTS balances and gradually phasing out the severance indemnity in the event of unfair dismissal.

Make labour training more attractive

- Improve the supply of vocational training while integrating it into upper-secondary education.
- Create a national skills certification system.
- Consider the options of replacing the current system of direct funding to institutions by voucher-type funding schemes to introduce contestability into the "S" system.

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Annex A1

The Determinants of Labour Force Participation and employment

This Annex uses household survey (IBGE/PNAD) data to estimate the determinants of female labour force participation and employability for prime-age (25-54 years) males and females, and youths (15-24 years). A probit model is estimated and the conventional explanatory variables are included in the estimating equations, including personal characteristics (years of schooling, age, age squared, household head status, number/age of children, household income and ethnicity) and market characteristics (dummies for place of residency, urban/rural status and metropolitan area effects). The dependent variable takes the value of "1" if the individual participates (is employed, in the employment equations) and "0", otherwise. The tables below report the marginal effects of the variables (*i.e.* the expected change in the probability of participation/employability given a marginal change in the explanatory variable), along with the estimated coefficients and standard errors. The Oaxaca-Yun decomposition (Yun, 2000) is used to single out how changes in individual characteristics and in the estimated coefficients have affected participation/employability during 1982-2004.[1] Table A1.1 reports the sample means of the data set.

Female labour force participation

The sample includes over 80 000 females aged 25-54 who have reported non-zero earnings in 1982 and 2004. The results reported in Table A1.2 suggest that the higher the educational attainment (relative to the omitted group of the least educated individuals, defined as those with 0-3 years of education), the higher the probability of labour force participation. A strong association between educational attainment and female labour supply is also found in the OECD area (Jaumotte, 2003). Female labour supply tends to rise with age in an "inverted-U" fashion. The disincentive effect associated with having young children has increased between 1982 and 2004, possibly due to a lack of availability of affordable day care and pre-school education. Moreover, household income (excluding the reference individual) was found to matter: participation rates are higher the higher the household income, but the marginal effect is lower in magnitude than in 1982. Other differences have weakened over time, including along ethnic and regional lines, although Southern women still tend to participate more, as well as those living in metropolitan areas.

The results of the Oaxaca-Yun decomposition, reported in Table A1.3, suggest that the effects of changes in the variables outweigh those of changes in the coefficients (the total effect is higher in Column B than in Column D), which capture variations in the "returns" to the different explanatory variables. The decomposition exercise suggests that educational attainment is a key determinant of female participation, accounting for over 45% of the increase in labour supply during 1982-2004 (Column B). Changes in the estimated coefficients account for 37% of the increase in female participation, including a fall in the returns to age and education for the better-educated individuals (Column C).

1. The Oaxaca-Yun and Oaxaca-Blinder methodologies for decomposition are analogous. However, as the probit model is non-linear, the decomposition components need to be linearised, and as such will not necessarily add to one.

Employability

Prime-age females

The results of the probit model, reported in Table A1.4, suggest the presence of a rising education premium, and that markets appear to have differentiated more in 2004 than in 1982 among the different levels of education. Age, with the usual "inverted-U" shape in 1982, but not in 2004, is an additional important determinant. Regional differences in employability have increased over time, and ethnic effects remain, to the detriment of non-whites. Living in urban/metropolitan areas has become a progressively more important factor militating against employability over time. The results of the Oaxaca-Yun decomposition, reported in Table A1.5, suggest that the effects of changes in coefficients outweigh those of changes in variables (Columns B and D). The increase in educational attainment contributed to increasing employability in both 1982 and 2004 (Columns A and C). The change in the coefficients on age turned out to have an important effect on employment probabilities in 2004: holding all other changes in coefficients constant, unemployment would have risen by almost 9.5 percentage points instead of the actual 5.3 percentage-point increase during 1982-2004 (Column C), had this change not occurred.

Prime-age males

The results of the probit estimations, reported in Table A1.6, suggest that educational attainment was a powerful determinant of employability in both 1982 and 2004, as in the case of prime-age females. Employment prospects were found to improve significantly in 2004 only for individuals with higher levels of education. Age had no effect on employability in 1982, but did in 2004. Unlike prime-age females, the number of children does not affect prime-age male employability. For both prime-age males and females, living in urban areas, and in particular in metropolitan centres, is associated with lower employment prospects. Regional differences in employability have become more marked for prime-age males than females. Moreover, the Oaxaca-Yun decomposition, reported in Table A1.7, suggests that the effects of changes in coefficients outweigh those of changes in variables (Columns B and D), as in the case of prime-age females. The increase in educational attainment contributed to reducing unemployment through changes in variables, but rising urbanisation had the opposite effect (Column A). Changes in the coefficient on age turned out to have an important effect on employment, as in the case of prime-age females, but contributed to increasing, rather than reducing, employment (Column C).

Female youths

The results of the probit estimations, reported in Table A1.8, confirm the finding for prime-age individuals of a rising education premium between 1982 and 2004. Living in urban areas reduces the probability of being employed. There has been greater differentiation across the regions, as in the case of prime-age males. In addition, the results of the Oaxaca-Yun decomposition, reported in Table A1.9, suggest that the effects of changes in coefficients outweigh those of changes in variables (Columns B and D), as in the case of prime-age individuals. The increase in educational attainment contributed to reducing the employability of those individuals with up to 8-11 years of schooling through changes in variables (Column A), but the increase in returns to education has had the opposite effect, regardless of the number of years of schooling (Column C).

Male youths

The results of the probit estimations, reported in Table A1.10, suggest that an increase in educational attainment reduced the probability of employment in 2004 for individuals with up to 11 years of education. Living in urban/metropolitan areas also reduced the probability of being employed, as in the case of prime-age individuals. The Oaxaca-Yun decomposition, reported in Table A1.11, suggests that the

effects of changes in coefficients outweigh those of changes in variables (Columns B and D), as in the case of prime-age individuals. The increase in educational attainment contributed to reducing employment for those with 8 years of schooling or more through changes in both variables and returns (Columns A and C).

Table A1.1. **Labour force participation and employment equations: Sample means, 1982 and 2004**

	Participation		Employment							
	Prime-age females		Prime-age females		Prime-age males		Female youths		Male youths	
	1982	2004	1982	2004	1982	2004	1982	2004	1982	2004
Participates	0.4	0.7	..	..	..	..	..	..	..	..
Is employed	..	..	1.0	0.9	1.0	1.0	0.9	0.8	0.9	0.9
Years of education										
4 to 7 years	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.2	0.4	0.3
8 to 11 years	0.2	0.4	0.2	0.4	0.2	0.4	0.3	0.6	0.2	0.5
12+ years	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1
Age	37.1	38.1	36.3	37.6	36.9	37.8	19.5	20.3	19.6	20.1
Age^2	1 448.7	1 525.2	1 383.3	1 478.2	1 431.8	1 496.5	388.2	419.4	392.2	411.8
Head of household	0.1	0.2	0.2	0.2	0.9	0.8	0.0	0.0	0.2	0.2
Other	0.2	0.2	0.2	0.2			0.8	0.8		
Household income	1 183.9	1 114.7	1 189.2	1 116.3	436.5	649.0	1 349.3	1 222.6	951.4	1 057.4
No. of children			1.2	0.7	1.5	0.8	1.0	0.7	1.0	0.6
No. of children by age										
0-2 years	0.3	0.1	..	..	..	..	..	..	..	..
3-5 years	0.4	0.2	..	..	..	..	..	..	..	..
6-10 years	0.6	0.4	..	..	..	..	..	..	..	..
11-17 years	0.8	0.5	..	..	..	..	..	..	..	..
Adults in household	2.8	2.7	2.8	2.6	2.7	2.7	3.5	3.2	3.5	3.3
Urban	0.8	0.9	0.8	0.9	0.7	0.8	0.8	0.9	0.7	0.8
South-East	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.5	0.4
Centre-West	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
North-East	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3
South	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Metropolitan area	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
White	0.6	0.5	0.6	0.6	0.6	0.5	0.6	0.5	0.6	0.5

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.2. **Labour force participation: Prime-age females, 1982 and 2004**
(Dep. variable: "1", if participates and "0", otherwise)[1]

	1982			2004		
	Marginal effect	Coefficient	Standard Deviation	Marginal effect	Coefficient	Standard deviation
Years of education						
4 to 7	0.065	0.165	0.011	0.075	0.212	0.013
8 to 11	0.251	0.642	0.016	0.179	0.515	0.014
12+	0.517	1.602	0.026	0.312	1.159	0.020
Age	0.039	0.100	0.006	0.033	0.090	0.006
Age^2	-0.001	-0.001	0.000	-0.001	-0.001	0.000
Head of household	0.332	0.868	0.016	0.167	0.505	0.013
Other	0.221	0.561	0.016	0.071	0.204	0.016
Household income	0.000	0.000	0.000	0.000	0.000	0.000
No. of children by age						
0-2	-0.096	-0.245	0.009	-0.126	-0.348	0.014
3-5	-0.038	-0.097	0.008	-0.041	-0.114	0.011
6-10	-0.001	-0.003*	0.006	-0.024	-0.068	0.008
11-17	0.018	0.047	0.005	0.009	0.025	0.006
Adults in household	0.005	0.013	0.004	-0.001	-0.004*	0.005
Urban	-0.018	-0.045	0.012	0.004	0.011*	0.014
South-East	-0.023	-0.059+	0.031	0.018	0.050	0.020
Centre-West	-0.068	-0.175	0.035	-0.005	-0.013*	0.025
North-East	-0.014	-0.034*	0.031	-0.011	-0.030*	0.021
South	0.061	0.153	0.032	0.076	0.219	0.023
Metropolitan	0.020	0.051	0.011	0.002	0.005*	0.011
White	-0.064	-0.163	0.011	-0.030	-0.085	0.010
Constant	..	-1.838	0.117	..	-1.281	0.115
No. Obs.		84 258			83 331	
Pseudo-R^2		0.12			0.0907	

1. All coefficients are statistically significant at the 5% level and above, except for those identified by (*). (+) identifies statistical significant at the 10% level.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.3. **Decomposition of female labour force participation: Prime-age females, 1982 and 2004**
(Based on the estimated equations reported in Table 4.A1.2, ΔFP = 0.22)

	Variables A	Per cent of ΔFP B	Coefficients C	Per cent of ΔFP D
Years of education				
4 to 7	-0.001	-0.7	0.005	2.1
8 to 11	0.057	25.9	-0.017	-7.9
12+	0.047	21.3	-0.022	-9.9
Age	-0.004	-2.0	-0.080	-36.6
Head of household	0.031	14.0	-0.026	-11.7
Other	0.004	1.9	-0.022	-10.2
Household income	0.003	1.4	0.025	11.2
No. of children by age	0.019	8.5	-0.004	-2.0
0-2				
3-5	0.007	3.4	-0.001	-0.5
6-10	0.000	0.1	-0.009	-4.1
11-17	-0.005	-2.3	-0.004	-1.9
Adults in household	-0.001	-0.3	-0.013	-7.4
Urban	-0.002	-0.8	0.017	8.0
South-East	0.001	0.3	0.018	8.1
Centre-West	-0.001	-0.5	0.005	2.1
North-East	0.000	0.1	0.000	0.2
South	-0.001	-0.3	0.004	1.7
Metropolitan	-0.000	-0.2	-0.006	-2.6
White	0.004	1.7	0.015	7.0
Constant	0.000	0.0	0.201	91.3
Total	0.158	71.7	0.081	37.0

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.4. **Employability: Prime-age females, 1982 and 2004**
(Dep. variable: "1", if is employed and "0", otherwise)[1]

	1982			2004		
	Marginal effect	Coefficient	Standard Deviation	Marginal effect	Coefficient	Standard deviation
Years of education						
4 to 7	-0.002	-0.029*	0.032	0.000	0.002*	0.025
8 to 11	-0.001	-0.019*	0.037	0.019	0.125	0.024
12+	0.015	0.233	0.052	0.060	0.494	0.033
Age	0.007	0.091	0.016	0.004	0.027	0.010
Age^2	-0.000	-0.001	0.000	-0.000	-0.000*	0.000
Head of household	-0.001	-0.013*	0.037	0.004	0.025*	0.020
Other	-0.012	-0.151	0.036	-0.038	-0.228	0.023
Household income	0.000	0.000	0.000	0.000	0.000	0.000
No. of children	-0.001	-0.019+	0.010	-0.010	-0.066	0.008
Adults in household	0.001	0.010*	0.011	0.002	0.013*	0.008
Urban	-0.028	-0.483	0.044	-0.049	-0.401	0.030
South-East	-0.013	-0.181	0.075	-0.014	-0.091	0.035
Centre-West	-0.005	-0.062*	0.089	-0.000	-0.002*	0.043
North-East	0.002	0.022*	0.077	-0.017	-0.108	0.035
South	-0.008	-0.105*	0.080	0.014	0.099	0.040
Metropolitan	-0.007	-0.098	0.026	-0.040	-0.248	0.016
White	0.012	0.157	0.028	0.012	0.081	0.017
Constant	..	0.150*	0.297	..	0.840	0.185
No. obs.		37 254			54 877	
Pseudo-R^2		0.0603			0.0564	

1. All coefficients are statistically significant at the 5% level and above, except for those identified by (*). (+) identifies statistical significant at the 10% level.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.5. **Decomposition of employability: Prime-age females, 1982 and 2004**
(Based on the estimated equations reported in Table 4.A1.4, ΔE = -0.05)

	Variables A	Per cent of ΔE B	Coefficients C	Per cent of ΔE D
Years of education				
4 to 7	0.000	0.0	0.001	-1.3
8 to 11	0.004	-7.6	0.002	-3.9
12+	0.005	-9.1	0.002	-4.1
Age	0.004	-7.0	-0.094	174.6
Head of household	0.000	-0.5	0.001	-0.9
Other	0.001	-2.7	-0.001	2.5
Household income	-0.000	0.7	0.001	-1.9
No. of children	0.005	-9.1	-0.004	7.8
Adults in household	-0.000	0.6	0.001	-1.2
Urban	-0.006	10.6	0.005	-9.0
South-East	0.000	-0.5	0.003	-6.0
Centre-West	0.000	0.0	0.000	-0.5
North-East	0.000	-0.7	-0.002	4.7
South	-0.000	0.4	0.003	-5.1
Metropolitan	0.001	-2.3	-0.004	8.2
White	-0.000	0.9	-0.003	6.3
Constant	0.000	0.0	0.052	-95.7
Total	0.014	-26.0	-0.040	74.4

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.6. **Employability: Prime-age males, 1982 and 2004**
(Dep. variable: "1", if is employed and "0", otherwise)[1]

	1982			2004		
	Marginal effect	Coefficient	Standard Deviation	Marginal effect	Coefficient	Standard deviation
Years of education						
4 to 7	-0.003	-0.054	0.024	0.001	0.011*	0.025
8 to 11	0.005	0.119	0.032	0.007	0.086	0.025
12+	0.013	0.370	0.049	0.022	0.326	0.037
Age	0.001	0.011*	0.013	0.003	0.036	0.010
Age^2	0.000	0.000*	0.000	-0.000	-0.000	0.000
Head of household	0.040	0.558	0.032	0.053	0.491	0.022
Household income	-0.000	-0.000*	0.000	0.000	0.000	0.000
No. of children	0.000	0.000*	0.008	-0.001	-0.014*	0.009
Adults in household	0.000	0.000*	0.009	-0.001	-0.013+	0.008
Urban	-0.020	-0.551	0.034	-0.032	-0.508	0.032
South-East	-0.010	-0.218	0.067	-0.017	-0.193	0.040
Centre-West	0.000	0.002*	0.079	-0.010	-0.106	0.049
North-East	-0.009	-0.169	0.068	-0.022	-0.236	0.040
South	-0.003	-0.061*	0.072	0.000	-0.000*	0.046
Metropolitan	-0.006	-0.116	0.022	-0.022	-0.241	0.018
White	0.004	0.087	0.022	0.005	0.060	0.018
Constant	..	1.690	0.247	..	1.273	0.196
No. obs.		75 869			70 861	
Pseudo-R^2		0.0822			0.0632	

1. All coefficients are statistically significant at the 5% level and above, except for those identified by (*). (+) identifies statistical significant at the 10% level.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.7. **Decomposition of employability: Prime-age males, 1982 and 2004**
(Based on the estimated equations reported in Table A1.6, ΔE = -0.02)

	Variables A	Per cent of ΔE B	Coefficients C	Per cent of ΔE D
Years of education				
4 to 7	0.000	0.1	0.001	-4.4
8 to 11	0.002	-7.3	-0.000	1.1
12+	0.001	-4.8	-0.000	0.8
Age	0.000	-1.0	0.013	-57.9
Head of household	-0.004	17.6	-0.003	12.3
Household income	0.000	-2.0	0.001	-2.6
No. of children	0.001	-3.9	-0.001	4.5
Adults in household	0.000	-0.2	-0.002	7.9
Urban	-0.005	21.1	0.001	-6.7
South-East	0.001	-3.2	0.001	-2.6
Centre-West	-0.000	0.5	-0.000	1.6
North-West	0.000	-0.2	-0.001	3.6
South	0.000	0.0	0.001	-2.2
Metropolitan	0.000	-1.9	-0.002	9.3
White	-0.000	1.8	-0.001	3.6
Constant	0.000	0.0	-0.020	89.8
Total	-0.004	16.5	-0.013	58.1

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.8. **Employability: Female youths, 1982 and 2004**
(Dep. variable: "1", if is employed and "0", otherwise)[1]

	1982			2004		
	Marginal effect	Coefficient	Standard Deviation	Marginal effect	Coefficient	Standard deviation
Years of education						
4 to 7	-0.036	-0.193	0.035	0.001	0.002*	0.052
8 to 11	-0.043	-0.223	0.039	-0.010	-0.033*	0.050
12+	-0.027	-0.139	0.063	0.075	0.263	0.063
Age	-0.018	-0.098*	0.066	0.043	0.138	0.062
Age^2	0.001	0.003	0.002	-0.001	-0.002*	0.002
Head of household	0.028	0.167	0.086	0.052	0.179	0.055
Other	-0.005	-0.029*	0.041	-0.008	-0.026*	0.032
Household income	-0.000	-0.000*	0.000	0.000	0.000	0.000
No. of children	-0.005	-0.030	0.010	-0.014	-0.047	0.011
Adults in household	0.001	0.006*	0.009	-0.004	-0.012*	0.009
Urban	-0.102	-0.690	0.039	-0.127	-0.473	0.035
South-East	-0.001	-0.008*	0.074	0.031	0.099	0.043
Centre-West	0.007	0.039*	0.085	0.034	0.115	0.053
North-East	-0.011	-0.058*	0.077	0.008	0.027*	0.044
South	0.018	0.105*	0.079	0.090	0.318	0.050
Metropolitan	-0.026	-0.137	0.025	-0.106	-0.332	0.022
White	0.013	0.070	0.026	0.019	0.062	0.022
Constant	..	2.591	0.646	..	-0.948*	0.612
No. obs.		21 270			19 519	
Pseudo-R^2		0.0488			0.0507	

1. All coefficients are statistically significant at the 5% level and above, except for those identified by (*). (+) identifies statistical significant at the 10% level.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.9. **Decomposition of employability: Female youths, 1982 and 2004**
(Based on the estimated equations reported in Table A1.8, ΔE = -0.136)

	Variables A	Per cent of ΔE B	Coefficients C	Per cent of ΔE D
Years of education				
4 to 7	-0.000	0.1	0.014	-10.6
8 to 11	-0.004	2.6	0.010	-7.7
12+	0.005	-3.5	0.004	-2.9
Age	0.017	-13.0	0.493	-362.9
Head of household	0.001	-1.0	0.000	0.0
Other	0.001	1.0	0.009	-6.4
Household income	-0.001	1.0	0.009	-6.4
No. of children	0.005	-3.5	-0.003	2.3
Adults in household	0.001	-1.0	-0.011	8.4
Urban	-0.015	11.3	0.031	-22.8
South-East	-0.001	0.9	0.010	-7.1
Centre-West	0.001	-0.6	0.001	-0.6
North-East	0.000	-0.1	0.004	-2.8
South	-0.004	2.9	0.007	-5.6
Metropolitan	0.001	-0.6	-0.013	9.2
White	-0.001	0.9	-0.001	0.7
Constant	0.000	0.0	-0.657	483.7
Total	0.006	-4.2	-0.101	74.6

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.10. **Employability: Male youths, 1982 and 2004**
(Dep. variable: "1", if is employed and "0", otherwise)[1]

	1982			2004		
	Marginal effect	Coefficient	Standard Deviation	Marginal effect	Coefficient	Standard deviation
Years of education						
4 to 7	-0.017	-0.132	0.025	-0.031	-0.147	0.040
8 to 11	-0.003	-0.059^{+}	0.030	-0.036	-0.175	0.039
12+	-0.011	-0.083*	0.068	-0.019	-0.088*	0.059
Age	-0.013	-0.101^{+}	0.054	0.025	0.119	0.059
Age^2	0.000	0.003	0.001	-0.000	-0.002*	0.001
Head of household	0.049	0.497	0.039	0.090	0.546	0.040
Household income	0.000	0.000*	0.000	0.000	0.000	0.000
No. of children	0.002	0.016	0.008	0.003	0.015*	0.011
Adults in household	-0.001	-0.005*	0.007	0.000	-0.001*	0.009
Urban	-0.085	-0.811	0.030	-0.115	-0.711	0.034
South-East	-0.010	-0.075*	0.058	-0.033	-0.159	0.043
Centre-West	0.010	0.087*	0.068	0.002	0.012*	0.054
North-East	-0.016	-0.124	0.060	-0.042	-0.194	0.043
South	0.008	0.069*	0.063	0.015	0.076*	0.050
Metropolitan	-0.023	-0.170	0.021	-0.086	-0.379	0.021
White	0.013	0.100	0.021	0.019	0.094	0.021
Constant	..	2.837	0.527	..	0.154*	0.573
No. obs.		40 434			27 292	
Pseudo-R^2		0.0809			0.0853	

1. All coefficients are statistically significant at the 5% level and above, except for those identified by (*). (+) identifies statistical significant at the 10% level.

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

Table A1.11. **Decomposition of employability: Male youths, 1982 and 2002**
(Based on the estimated equations reported in Table A1.10, ΔE = -0.065)

	Variables A	Per cent of ΔE B	Coefficients C	Per cent of ΔE D
Years of education				
4 to 7	0.002	-3.0	-0.001	1.3
8 to 11	-0.002	3.6	-0.013	19.6
12+	-0.000	0.6	-0.000	0.1
Age	0.001	-2.0	0.513	-783.7
Head of household	-0.001	0.9	0.001	-2.3
Household income	0.000	-0.1	0.006	-8.6
No. of children	-0.001	1.4	-0.000	0.3
Adults in household	0.000	-0.2	0.003	-4.5
Urban	-0.012	17.9	0.017	-25.3
South-East	0.001	-0.9	-0.007	10.5
Centre-West	0.000	-0.2	-0.001	1.9
North-West	-0.000	0.6	-0.004	6.6
South	-0.000	0.4	0.000	-0.3
Metropolitan	0.000	-0.2	-0.012	18.8
White	-0.001	1.6	-0.001	0.9
Constant	0.000	0.0	-0.555	848.0
Total	-0.013	20.4	-0.054	83.3

Source: IBGE (National Household Survey, PNAD) and OECD calculations.

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