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Encouraging Labour Force  
Participation in Chile

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## ABSTRACT/RESUME

### Encouraging labour force participation in Chile

Chile's labour force participation is low by comparison with most countries in the OECD area, especially among females and youths. In the case of women, labour supply has risen steadily over time for prime-age and older individuals, against a background of relative stability for men. With regards to youths, participation rates are trending down, primarily as a result of rising school enrolment, especially for males, while remaining fairly low and stable over the years for young females. The main policy challenge in this area is to raise female labour supply further, for both prime-age individuals and youths, as a means of making a better use of labour inputs in support of long-term growth. This can be achieved essentially by removing provisions in the labour code that constrain the allocation of working time and by improving access to affordable child care for mothers with young children. Policies aimed at fostering human capital accumulation for the population as a whole would also contribute, because educational attainment is one of the most powerful determinants of labour force participation. This paper relates to the *2007 Economic Survey of Chile* ([www.oecd.org/eco/surveys/chile](http://www.oecd.org/eco/surveys/chile)).

*JEL codes:* J13, J21, J22

*Keywords:* Chile, labour force participation, child care, pre-school education

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### Encourager l'activité au Chili

Le taux d'activité du Chili est faible par comparaison avec la plupart des pays de la zone OCDE, surtout parmi les femmes et les jeunes. Dans le cas des femmes, l'offre de main-d'œuvre a augmenté régulièrement avec le temps dans les classes d'âge de forte activité et au-delà, tandis qu'elle restait relativement stable chez les hommes. En ce qui concerne les jeunes, les taux d'activité sont orientés à la baisse, principalement du fait des progrès de la scolarisation, surtout chez les hommes, alors qu'ils restent assez faibles et stables chez les femmes. Le principal enjeu dans ce domaine est de renforcer l'offre de travail des femmes, à la fois dans les classes d'âge de forte activité et chez les jeunes, afin de mieux utiliser le facteur travail en le mettant au service de la croissance à long terme. Cela suppose essentiellement que l'on supprime du code du travail les contraintes qui pèsent sur l'affectation du temps de travail et que l'on développe l'offre de services de garde d'un coût abordable pour les mères de jeunes enfants. Le niveau d'instruction étant l'un des principaux déterminants de l'activité, des mesures qui tendraient à renforcer l'accumulation de capital humain dans l'ensemble de la population auraient également leur utilité. Ce document se rapporte à l'*Étude économique du Chili 2007* ([www.oecd.org/eco/etudes/chili](http://www.oecd.org/eco/etudes/chili)).

*Classification JEL :* J13, J21, J22

*Mots-clés :* Chili, taux d'activité, garde des enfants, accueil préscolaire

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## Encouraging labour force participation in Chile

By

D. Contreras, L. de Mello and E. Puentes<sup>1</sup>

Chile's labour force participation is low by comparison with most countries in the OECD area, especially among females and youths. In the case of women, labour supply has risen steadily since 1990 for prime-age and older individuals, against a background of relative stability for men. With regards to youths, participation rates are trending down, predominantly as a result of rising school enrolment, especially for males, while remaining fairly low and stable over the years for young females. The share of youths who are neither studying nor working is also coming down, although it remains comparatively high for females. This group is not accumulating any kind of human capital and face a labour market that is putting an increasingly high premium on human capital. The empirical evidence reported in this paper, based on household survey data, shows that educational attainment is one of the most powerful determinants of participation, for both men and women. The main policy challenge in this area is to raise female labour supply further, for both prime-age individuals and youths, as a means of making better use of available labour inputs in support of living standards and long-term growth, reducing poverty and improving income distribution.

### Labour market trends

#### *Labour force participation, employment and unemployment*

On the basis of household survey data, Chile's labour supply has exhibited distinctly different trends along gender and age lines over the years. On the one hand, female participation has been on the rise, increasing by almost 10 percentage points during 1990-2003 to about 42%, especially for individuals aged between 55-64 years (Table 1). Notwithstanding this increase, female participation remains low by OECD and even Latin American standards, as noted in OECD (2005a). This is in contrast with a relative stability in male participation since 1990 at about 73% in 2003, which is close to the OECD average. On the other hand, in the case of youths, participation has been low and stable over the years for females, but relatively high, although falling, for males. The gender gap in participation rates remains sizeable, but is falling over time as a result of the relative stability of labour supply among males and an increase for females, which is welcome. In any case, it should be recognised that these trends are likely to have been affected by the pick-up in economic activity following the 1998-2003 slowdown.

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Table 1. Labour force participation, employment and unemployment by age and gender, 1990-2003

In per cent

Age group	Participation			Employment			Unemployment		
	1990	1996	2003	1990	1996	2003	1990	1996	2003
<b>Females</b>									
15-24	27.3	27.9	30.1	22.1	23.2	22.3	18.9	16.8	26.0
15-19	12.9	12.6	13.4	9.7	9.3	8.9	24.9	25.9	33.3
25-54	41.7	47.6	55.8	38.7	45.0	50.3	7.3	5.5	9.9
55-64	20.7	26.2	34.3	19.9	25.5	31.7	3.8	2.7	7.5
65+	6.1	7.3	7.7	5.9	7.0	7.4	3.2	3.6	2.9
15+	32.4	36.3	42.2	29.3	33.6	37.1	9.6	7.3	12.1
<b>Males</b>									
15-24	51.4	46.8	41.7	43.8	42.2	34.2	14.7	9.9	17.9
15-19	26.7	21.9	17.1	21.5	18.5	13.1	19.6	15.5	23.7
25-54	93.7	94.5	93.9	88.2	90.9	87.7	5.9	3.8	6.5
55-64	69.6	75.6	78.0	66.0	72.5	72.3	5.2	4.2	7.3
65+	25.2	30.9	29.2	23.1	29.4	27.8	8.2	4.9	4.9
15+	73.6	74.7	73.1	68.0	71.0	67.1	7.6	4.9	8.2

Source: MIDEPLAN (CASSEN database) and OECD calculations.

As in the case of trends in participation, there are important age- and gender-related differences in employment rates. Employment increased steadily during 1990-2003 for females, but began to fall after 1996 for males, having risen gradually during 1990-96. These trends nevertheless mask important discrepancies among different age groups. In the case of youths, employment remained stable for females during 1990-2003, whereas there was a pronounced decline for males, especially for the 15-19 age group, a pattern that tracks closely the trends in participation described above. The increase in employment among older workers (55 years and above) is also noticeable for both men and women.

Unemployment trends reflect a mismatch between participation and employment. Unemployment fell in the high-growth period that preceded the Asian crisis and rose thereafter for both males and females. A slowdown in economic activity during 1998-2003, coupled with a concomitant sharp increase in the minimum wage in real terms, are the main culprits for rising unemployment, as discussed in previous *Surveys*. Also, unemployment is typically higher for females than males, despite their much lower labour force participation. The gradual increase in female unemployment suggests that labour demand has not expanded *pari passu* with the increase in participation, especially for youths and older women (aged 55-64 years). This is nevertheless not the case for elderly females (aged 65 years and above), for whom the unemployment rate is low and falling. A combination of high and rising unemployment among youths and low and falling unemployment among the elderly also characterizes unemployment trends for males, despite their much higher participation rates.

As usual, participation rates are strongly correlated with educational attainment. Labour supply rises monotonically with years of schooling among females, but only for individuals with up to 12 years of education in the case of males (Table 2). Participation is lower among the best educated men than for those with 12 years of education. The sharpest increase in participation during 1990-2003 was for individuals – both males and females – with 12 years of education, for whom the increase in unemployment was most severe. These trends also suggest that demand for better educated individuals – those who have completed at least upper-secondary education – has not kept pace with supply.

Table 2. Labour force participation and unemployment by educational attainment, 1990-2003

In per cent

Years of schooling	Participation			Unemployment		
	1990	1996	2003	1990	1996	2003
<b>Females</b>						
Less than 8	21.7	22.6	24.6	8.3	6.3	9.9
8-11	25.7	29.9	32.9	12.2	8.9	13.1
12	40.0	46.0	52.3	10.3	8.6	15.0
12+	56.0	58.4	62.0	8.1	5.6	9.6
<b>Males</b>						
Less than 8	73.8	72.7	66.0	7.9	5.1	8.3
8-11	69.6	69.9	67.4	9.5	5.6	9.2
12	79.2	82.8	83.5	6.9	4.8	8.7
12+	74.7	75.9	75.9	5.1	3.6	6.4

Source: MIDEPLAN (CASEN database) and OECD calculations.

Cohort effects explain to a large extent a comparatively low unemployment rate among the least educated individuals. Unemployment is lower for both men and women with less than 8 years of education than for individuals with 8-12 years of education. This is because of comparatively low unemployment among older individuals, who tend to be less educated than younger generations, given the considerable increase in educational attainment in Chile over the years. These trends underscore the presence of strong inter-generational effects on both participation and unemployment.

The effective gender gap in labour force participation is higher still when part-time work is taken into account; it tends to be more prevalent among women (Table 3). The incidence of part-time work rose for both females and males during 1990-2003, regardless of their educational attainment, and is now close to the OECD average, although it is lower than in regional comparator countries, such as Brazil (OECD, 2006). Part-time work is also strongly affected by educational attainment: the percentage of working-age women with at least 12 years of schooling who work less than 20 hours per week is less than one-half of that of their counterparts with less than 12 years of schooling. These trends underscore the fact that part-time work is an option for women to reconcile household and professional activities, as in many countries in the OECD area. But the strong correlation between the incidence of part-time work and educational attainment also suggests that part-time work may be the only viable arrangement for less educated women, for whom child care and pre-compulsory education services may be prohibitively expensive.

Table 3. Incidence of part-time work by gender and educational attainment, 1990-2003

Individuals aged 15-64 years working less than 20 hours per week, in per cent

Years of schooling	Males			Females		
	1990	1996	2003	1990	1996	2003
<b>Total</b>	<b>3.1</b>	<b>3.6</b>	<b>4.9</b>	<b>6.5</b>	<b>7.8</b>	<b>10.5</b>
Less than 8	3.5	4.6	6.6	9.9	9.7	15.7
8-11	3.4	4.3	5.1	7.4	10.9	15.2
12	2.2	2.3	3.8	4.2	6.0	8.9
12+	3.1	2.9	4.8	5.2	6.0	7.0

Source: MIDEPLAN (CASEN database) and OECD calculations.



The design of social insurance schemes affects labour supply among older workers. Recent empirical evidence based on household survey data (the University of Chile's *Encuesta de Ocupación*, which focuses on the metropolitan region of Santiago) suggests that the pension reform of the early 1980s, which replaced a pay-as-you-go system by a privately-run, fully-funded, defined-contribution scheme, encouraged labour force participation among the elderly (James and Edwards, 2005). This is because of a combination of restricted access to savings in the event of early retirement, on the one hand, and a strengthening of the actuarial linkage between contributions and retirement income, on the other. The reform also exempted pensioners who continue to work after retirement from social security contributions. This reduction in the tax burden on post-retirement income also encouraged labour force participation among the elderly.

### *Gender-related earnings differentials*

In spite of being on average better educated than men, women earn less. Although the gender-earnings gap has narrowed over time, especially for the least educated individuals (with less than 8 years of schooling), it remains sizeable among the best educated individuals (with at least 12 years of schooling) (Table 4). Empirical evidence suggests that, once other individual characteristics are controlled for, males with a university degree earn about 50% more than females with the same qualifications, against an average gender-earnings gap of 22-35% (Nopo, 2006). Controlling for age, marital status, educational attainment, occupation and whether or not the individual works full-time, the gender-earnings gap rises with earnings from about 20-30% on average during 1992-2003 in favour of males up to the 70<sup>th</sup> percentile of the wage distribution to over 70% at the top end. Nevertheless, to a large extent, this reflects an occupational-experience gap, due to women's spells of inactivity during their working lives as a result of child bearing. Once the average number of years at the same job is taken into account, as well as age, marital status and educational attainment, empirical evidence suggests that the gender-earnings gap fluctuates between 10-20% for most of the wage distribution, although it rises sharply for the top five percentiles.

Discrepancies in earnings are related not only to gender but also to years of schooling, suggesting that returns to education may be high. Measured in terms of average hourly wage ratios across educational attainment categories, returns are highest for the best educated individuals, both males and females (Table 5). Returns fell gradually for females with up to 11 years of schooling during 1990-2003 and rose considerably for the best educated females and for the least educated males. The increase in the wage premium associated with having more than 12 years of schooling during 1990-2003 is striking for both males and females. These trends reflect to some extent supply effects, which may have prevented a faster increase in earnings, at least in the case of females, given that the increase in participation was particularly sharp for individuals with up to 12 years of schooling.

Table 4. **Earnings-gender gap by educational attainment, 1990-2003**

Ratio of male to female average hourly wages <sup>1</sup>			
Years of schooling	1990	1996	2003
Less than 8	1.60	1.28	1.22
8-11	1.44	1.26	1.39
12	1.37	1.30	1.30
12+	1.75	1.61	1.57

1. Individuals aged 15-64 years working on a full-time basis.

Source: MIDEPLAN (CASSEN database) and OECD calculations.

Table 5. Average hourly wage ratios by gender and educational attainment, 1990-2003

Individuals aged 15-64 years working on a full-time basis

	Males			Females		
	1990	1996	2003	1990	1996	2003
8-11 years to less than 8 years	1.12	1.35	1.30	1.25	1.38	1.14
12 years to 7-11 years	1.46	1.44	1.42	1.53	1.40	1.52
12+ years to 12 years	2.14	2.39	2.59	1.68	1.93	2.14

Source: MIDEPLAN (CASEN database) and OECD calculations.

### *Youth participation and schooling*

The decline in labour supply among youths is closely associated with an increase in school enrolment and improving educational attainment. Low participation is not a problem to the extent that youngsters opt to delay entry into the labour market in order to spend more time in education, and if returns to formal education are higher than those to seniority. There is plenty of anecdotal evidence, supported by the empirical analysis reported in Annex A1, that this is the case in Chile. But there are countries in the OECD area, such as the Netherlands and the United Kingdom, that have managed to combine high education attainment with high participation among youths. It is likely that more youths will need to work to finance, at least in part, the cost of their studies as post-secondary enrolment rises further and against a dearth of government support. Therefore, there may be scope for policy action to make it easier for youths to join the labour force, if they so wish, while remaining in education.

Most youths aged 15-19 years study and do not work, a share which increased considerably during 1990-2003 for both males and females (Table 6). By contrast, the percentage of young men who work, instead of studying, remains higher than that for females, but is much lower in 2003 than it was in 1990. Coupled with an increase in the share of youngsters who study while working, these trends are consistent with rising returns to higher education, as well as the increasing premium the labour market is putting on skills. But the proportion of youths who are neither studying nor working remains high. This is particularly worrying in the case of women aged 20-24 years, despite a steady decline during 1990-2003.

Table 6. Distribution of youths by education and employment status, 1990-2003

In per cent

	15-19 years			20-24 years		
	1990	1996	2003	1990	1996	2003
<b>Males</b>						
Not studying nor working	13.2	12.0	11.7	18.0	11.1	16.5
Not studying but working	19.4	16.0	9.7	64.0	61.4	49.8
Studying and not working	65.3	69.4	75.2	15.7	22.9	26.4
Studying and working	2.0	2.5	3.4	2.4	4.6	7.3
<b>Females</b>						
Not studying nor working	26.8	19.3	16.5	53.4	41.4	38.2
Not studying but working	8.6	7.5	6.2	32.6	33.9	30.3
Studying and not working	63.5	71.3	74.6	12.6	21.6	26.0
Studying and working	1.1	1.9	2.8	1.4	3.2	5.5

Source: MIDEPLAN (CASEN database) and OECD calculations.

## **The determinants of labour force participation and employment**

The empirical evidence reported in Annex A1, based on household survey data for 1990-2003, allows for the identification of the main determinants of participation for both prime-age individuals and youths.<sup>2</sup> In particular:

- Educational attainment is among the key determinants of labour supply, for both males and females. The effect of educational attainment is particularly strong for prime-age females with at least 12 years of schooling. For prime-age males, the effect is strongest for those individuals with up to 12 years of schooling. In the case of youths, educational attainment is a powerful deterrent to male participation, given the trend towards rising school enrolment and falling participation over the years, but it is not the case for females, whose participation rates are on the rise together with an increase in educational attainment.
- The number of young children in the household is a powerful deterrent to female participation, both for prime-age and young women. This effect is particularly strong for those with children aged less than three years. The converse is true in the case of males, as expected, for whom participation rises with the number of children in the household. The presence of an adverse effect for young females suggests that they may be expected to contribute to intra-household arrangements for child care. This is consistent with the finding that female participation rises with the number of elderly individuals in the household, which suggests that intra-household arrangements are important for child care so that mothers with young children can return to the labour force.
- Household income is another important determinant of participation and employability, especially for females (prime-age and youths). Participation tends to be lower for women living in more affluent households, although that has not always been the case, and to a certain extent the same is true for men. The probability of participation also rises for prime-age women who are heads of household.
- Regional and demographic effects also matter. As expected, labour supply rises with age, albeit in a non-linear fashion for both prime-age males and females, and is lower in rural areas than in urban areas for prime-age and young females. It is also higher in the metropolitan region of Santiago than in the rest of the country.

Educational attainment is a powerful determinant of employability too. The empirical findings about the main determinants of participation are similar to those of employability. The presence of young children in the household is also detrimental to female employment, as in the case of participation. This finding is consistent with the experience of OECD countries and Brazil, a regional comparator, which suggests that the gender gap in employment widens as the number of children in the household unit increases.

Participation and employability are likely to benefit from two policy measures put in place over the last few years. The first is the implementation of full-day schooling in municipal and subsidised private schools, which started in 1997. This measure is likely to have encouraged female participation, especially among mothers with young children, who might want to work on a full-time basis and are prevented from doing so due to a scarcity of affordable child-care facilities. The empirical evidence reported above underscores the disincentive effect on participation associated with the presence of older children (aged

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2. These findings are broadly in line with those reported by Contreras and Puentes (2004) using a labour market survey conducted by the University of Chile for the metropolitan region of Santiago since 1957.

6-10 years) in the household. The second is the extension of compulsory schooling to lower-secondary education in 2003, resulting in 12 years of compulsory education, which is likely to have a positive impact on female participation and employability. This is because, on the basis of the empirical findings reported above, there is a disincentive effect for participation associated with the presence of older children (aged 11-17 years) in the household. Of course, this disincentive effect is much weaker than in the case of younger children.

Structural shifts in the economy, as well as individual and market characteristics, have affected participation and employability. The empirical results reported in Annex A1 can be used to decompose changes in participation during 1990-2003 between changes in its main determinants and in the estimated coefficients (Box 1). The same exercise can be carried out for employability. In doing so, it is possible to assess the impact on participation/employability of structural changes in the economy (captured by changes in estimated coefficients) relative to that of changes in individual and market characteristics (captured by changes in variables).

**Box 1. Determinants of labour force participation and employment: A decomposition exercise**

Regression analysis, such as that reported in Annex A1, is conventionally used to estimate the main determinants of labour force participation and employment. Probit models are particularly useful because the main variables of interest – participation and employability – are binary (*i.e.* they are value “0”, if the individual participates or is employed, or “1”, otherwise) and may therefore be expressed in terms of probabilities. Once the regressions have been estimated, the overall effect on participation/employment can be decomposed between changes in variables and in the estimated coefficients. To this end, several methodologies are now available, including that of Yun (2004).

The basic idea of the decomposition exercise is that participation/employability, denoted by  $Y$ , is a function of several market-related and individual characteristics, such that it can be written as:

$$Y = F(X' \beta),$$

where  $F$  is a normally distributed cumulative density function, as in a probit model,  $X$  is a set of regressors, which includes the main determinants of participation/employability, and  $\beta$  is a vector of estimated coefficients.

The decomposition exercise consists of re-writing  $Y$  as follows:

$$\bar{Y}_t - \bar{Y}_{t+1} = \overline{F(X'_t \beta_t)} - \overline{F(X'_{t+1} \beta_{t+1})} = \overline{F(X'_t \beta_t)} - \overline{F(X'_{t+1} \beta_t)} + \overline{F(X'_{t+1} \beta_t)} - \overline{F(X'_{t+1} \beta_{t+1})}$$

Changes in  $Y$  – denoted by  $\bar{Y}_t - \bar{Y}_{t+1}$  – can therefore be written as a sum of two components. The first term –  $\overline{F(X'_t \beta_t)} - \overline{F(X'_{t+1} \beta_t)}$  – accounts for changes over time in variables (the determinants of participation/employment included in  $X$ ), whereas the second term –  $\overline{F(X'_{t+1} \beta_t)} - \overline{F(X'_{t+1} \beta_{t+1})}$  – accounts for changes in the estimated coefficients ( $\beta$ ).

Intuitively, changes in coefficients measure to some extent structural changes in the economy, such as structural reform in product markets, trade liberalisation, amendments to the labour code, etc. Changes in variables, on the other hand, are related predominantly to the individual and market-related characteristics, such as those related to demography, household status, residency location and human capital accumulation.

Table 7. **Participation and employability: Decomposition analysis, 1990-2003**Based on the regression results reported in Annex A1<sup>1</sup>

	Males		Females	
	Youths	Prime-age individuals	Youths	Prime-age individuals
Change in participation	9.7	-0.2	-2.8	-14.1
Change in variables	6.8	0.9	-1.7	-5.9
Change in coefficients	2.4	-1.0	-0.5	-7.6
Change in employment	9.6	0.5	-0.2	-11.6
Change in variables	6.2	0.5	-1.6	-5.8
Change in coefficients	3.1	-0.1	2.0	-5.1

1. Changes are defined as the difference between the participation/employment rates in 1990 and in 2003. A negative (positive) number denotes an increase (decline) in participation/employment.

Source: MIDEPLAN (CASEN database) and OECD estimations.

Although statistical testing does not always yield clear-cut results, the decomposition exercise carried out on the basis of the analysis reported in Annex A1 suggests that:

- In the case of labour supply, structural changes in the economy (captured in the estimated coefficients for the participation equations for 1990 and 2003) have been the main determinants of rising participation for prime-age individuals (Table 7). The converse is nevertheless true for youths, for whom long-term trends in the underlying individual and market-related determinants, especially those associated with rising human capital, explain most of the change in participation during 1990-2003.
- With regard to labour demand, on the other hand, long-term trends in the underlying determinants of employability, rather than structural changes in the economy, tend to explain most of the changes in employment rates for both prime-age individuals and youths.

### Challenges and policy recommendations

Chile's gender gap in labour supply remains sizeable. Notwithstanding a gradual increase over the years, female labour force participation is well below the OECD average. There are cultural reasons why women may prefer to focus on household responsibilities, rather than to engage in gainful activities outside the home.<sup>3</sup> But there is also scope for policy action in this area. By fostering labour force participation among the groups that are lagging behind, such as females and youths, policies can contribute to raising the economy's long-term growth potential, and reducing poverty and income inequality. Empirical evidence suggests that an increase in participation among individuals in the poorer one-half of the income distribution may have a significant impact on poverty and income distribution.<sup>4</sup>

On the basis of the empirical analysis reported above, human capital appears to be an important determinant of both labour force supply and employability. Therefore, policies that foster human capital

3. Evidence based on survey data shows that conservative social attitudes towards working women are an important deterrent to female labour force participation, an effect that is estimated to far outweigh the positive impact of education attainment on a woman's propensity to work outside the home (Contreras and Plaza, 2006).

4. See Bravo and Contreras (2004) for more information.

accumulation for the population as a whole would contribute to reducing the remaining gender gap in labour supply and employment. Rising school enrolment explains to a large extent the decline in participation among young men. But a still large share of youngsters, especially women, who neither study nor work is worrying, possibly because they care for younger siblings. At the same time, the presence of young children in the household creates a strong disincentive for participation among young and prime-age females, which suggests that informal intra-household arrangements may not be effective enough to compensate for a scarcity of affordable child care and pre-school education, which would make it easier for mothers with young children to work.

### ***Strengthening the framework conditions for labour utilisation***

Policy options for encouraging more flexible arrangements in the allocation of working time are likely to have a bearing on labour force participation. Mothers with young children may opt to work less than full time as a means of reconciling household and work responsibilities but may be prevented from doing so. The prevalence of part-time work among Chilean women is below the OECD area average; it is also low in relation to regional comparators, such as Brazil. The constraints imposed by the labour code on the allocation of working time, discussed in OECD (2005a), may play a part. In this regard, a recommendation to clarify regulations so that working time can be reduced by any number of hours, and not necessarily by as much as one-third, a limit that currently triggers some special provisions, would go in the direction of fostering female participation, given that part-time work tends to be more prevalent among women.

It is too soon to evaluate the impact of recent reforms of regulations on labour dispatching and subcontracting, but anecdotal evidence available to date is encouraging. The reform of legislation on labour dispatching in early 2007 removed legal uncertainty as to responsibilities of client enterprises and dispatching firms that had discouraged the use of this flexible form of employment. The concomitant strengthening of the legal framework for subcontracting also goes in the direction of encouraging participation among females and youths, who are most likely to benefit from more flexible working practices. These reform initiatives are important, because the experience of OECD countries suggests that the easing of constraints imposed by employment protection legislation can do much to improve employment outcomes, especially when accompanied by regulatory measures in product markets that ease restrictions on the entry and expansion of new firms. The authorities are therefore advised to remain vigilant and to respond promptly to any remaining obstacles that might not have been addressed in these recent reforms.

### ***Making social protection conducive to participation***

A strengthening of Chile's social protection discussed in de Mello (2008) and Contreras, de Mello and Puentes (2008), may affect labour supply. In principle, reform options that go in the direction of increasing the perceived benefit of formal employment relative to its costs would encourage labour force participation. However, the costs of increased social protection, including those arising from mandatory social security contributions and health insurance for own-account workers, may be too high for the individuals whose attachment to the labour force is weakest, which include females and youths. These individuals might opt for not participating at all or for doing so informally. The authorities are advised to monitor trends in labour supply during the period in which social security contributions by own-account workers will be voluntary (during 7-10 years after approval of the pension reform proposal) and identifying the groups whose labour supply may be discouraged, once social security contributions and health insurance become compulsory (10 years after approval of the pension reform proposal).

By the same token, the effect on participation of some additional measures that are being proposed in the area of pension reform is uncertain. In particular, the introduction of a bonus per child to be awarded to women as a means of fostering gender equality, the lowering of life and invalidity insurance premia for

women and options for boosting competition among AFPs to reduce administrative costs are measures that make saving for retirement more attractive for women and youths, hence possibly contributing to participation. But the question of whether or not the proposed reforms, including in the area of health insurance, will make participation attractive enough to compensate for the additional costs these contributory programmes will entail is essentially empirical. The reforms are planned to be implemented in a phased manner, which is welcome, to allow the authorities to monitor closely the ensuing changes in incentives for participation and informality.

Social security reform is also likely to affect the incentives for participation among youths. The introduction of a pension contribution subsidy for individuals aged 18-35 earning less than 1.5 times the minimum wage on their first jobs is likely to encourage youth participation. However, the age group envisaged by the programme is rather broad. If the initiative's focus is on youths, the 18-24 age group could be targeted instead, because this is the demographic group for which informality is most widespread and labour force participation is lowest. By making the hiring of youths more attractive, the subsidy programme would also contribute to removing financial constraints on human capital accumulation and to encourage those youngsters who are neither studying nor working to engage in a paid occupation that may enhance their earnings capacity in the future.

### ***Facilitating access to child care***

Public finances permitting, options could be considered for facilitating access to child care so as to encourage female labour supply. The payoff from continued policy action in this area is potentially very large. Mothers with younger children, especially those in low-pay jobs, often find it prohibitive to work while having to pay for these services out of pocket. In fact, according to the 2003 CASEN survey, 16% of women aged 25-39 stated that they did not look for a job in the previous two months because they did not have an option for child care (Politeia, 2007). This problem is worse for low-income mothers, affecting about 22% of mothers aged 20-29 years in the bottom income quintile, against less than 5% for those in the top quintile.

The supply of child care centres for young children has increased significantly over the years, but there is much room for improvement. Chilean legislation mandates enterprises with at least 20 female employees to provide child care facilities (in the work place or outside it) for children aged less than 2 years. But this provision affects only a small proportion of enterprises (about 17% in 2004). Most mothers, especially those with a comparatively weak attachment to the labour force and on precarious jobs, therefore need to rely on publicly provided facilities (including JUNJI and *Fundación Integra*), especially among the low-income groups (Table 8). For older children, access to pre-school education is on the rise. About 57% of children aged 3-5 were engaged in pre-school education in 2003 (against 36% in 1990), whereas only just over 6% of those aged 0-3 were in child care (2.5% in 1990). Facilitating access to publicly-funded child care is important not only from the viewpoint of encouraging female labour supply, but also because international experience suggests that access to early childhood education can improve school outcomes later in life, strengthening educational attainment.

Of course, the net economic benefit of reducing the costs of child care borne by parents depends ultimately on the labour-supply response. This is an empirical question. But an increase in the availability of affordable child care may affect participation not only for prime-age women, but also among other household members. This is the case of the elderly, for example, whose presence in a household is strongly correlated with prime-age female participation on the basis of the empirical analysis reported in Annex A1 and discussed above. Older household members can be relied upon for child care through informal intra-household arrangements. This is also the case of female youths, whose participation is discouraged by

Table 8. **Distribution of child care facilities by income group, 2003**

In per cent

	Income quintile					Total
	I	II	III	IV	V	
Municipal	16.8	14.0	17.7	3.7	0.3	10.3
Private subsidised	5.2	5.5	5.1	6.8	14.8	7.8
Fully private	0.0	5.6	23.5	52.9	61.0	29.0
JUNJI <sup>1</sup>	48.7	42.1	35.2	20.1	4.4	29.6
<i>Fundación Integra</i>	24.9	22.6	8.1	6.9	2.5	12.7
Enterprise-based	2.4	5.4	6.1	9.6	17.0	8.4
Unknown	2.0	5.0	4.4	0.0	0.2	2.3

1. *Junta Nacional de Jardines Infantiles.*

Source: Politeia (2007).

the presence of young children in the household, which suggests that they too contribute to child care. This may explain to some extent the high percentage of young women who neither study nor work. If this is the case, the payoff of policies aimed at facilitating access to child care services would go far beyond the increase in participation among prime-age females, because they would unlock opportunities for both young women and older household members to engage in gainful occupations. The fact that informal arrangements for child care within the household are likely to change when the younger cohorts, who have higher participation rates, grow older also needs to be taken into account. Moreover, because female employability depends strongly on educational attainment, the constraint imposed by a lack of affordable child care services may affect less-educated individuals disproportionately.



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*Annex A1***The determinants of labour force participation and employment**

This Annex uses data from the CASEN household survey to estimate the determinants of labour force participation and employability for prime-age (25-54 years) males and females and youths (15-24 years) on the basis of probit models for 1990, 1996 and 2003.

**The determinants of labour force participation***Prime-age females*

The results of the probit estimations for prime-age females, reported in Table A1.1, indicate that educational attainment, measured by years of schooling, increases the probability of participation. The participation effect is particularly strong for individuals with at least 12 years of schooling. Age contributes positively to participation in a non-linear manner, underscoring the presence of strong life-cycle effects in labour supply. The number of children in the household affects negatively the probability of participation, especially for those aged less than three years. The number of elderly individuals in the household affects positively the probability of participation. The effect of household income on labour supply changed over time: it was positively correlated with participation in 1990 and 1996, but the estimated coefficient turned negative in 2003. The probability of participation is also higher for women who are heads of household, lower in rural areas than in urban areas, and higher in the metropolitan region of Santiago than in the rest of the country. The results are similar for the employability regressions (reported in Table A1.2).

Table A1.1. Labour force participation equations: Prime-age individuals, probit models<sup>1</sup>

	Males			Females		
	1990	1996	2003	1990	1996	2003
Years of schooling						
8-11	0.019** (0.000)	0.020** (0.000)	0.034** (0.000)	0.005** (0.001)	0.069** (0.001)	0.066** (0.001)
12	0.031** (0.000)	0.029** (0.000)	0.041** (0.000)	0.112** (0.001)	0.151** (0.001)	0.165** (0.001)
12+	0.018** (0.000)	0.019** (0.000)	0.026** (0.000)	0.319** (0.001)	0.328** (0.001)	0.315** (0.001)
Age	0.016** (0.000)	0.013** (0.000)	0.019** (0.000)	0.023** (0.000)	0.013** (0.000)	0.017** (0.000)
Age squared	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)
Number of children in the household						
Less than 3 years	0.008** (0.000)	0.011** (0.000)	0.014** (0.000)	-0.084** (0.001)	-0.095** (0.001)	-0.090** (0.001)
3-5 years	0.011** (0.000)	0.014** (0.000)	0.014** (0.000)	-0.064** (0.001)	-0.060** (0.001)	-0.062** (0.001)
6-10 years	0.006** (0.000)	0.009** (0.000)	0.007** (0.000)	-0.053** (0.001)	-0.052** (0.001)	-0.057** (0.001)
11-17 years	0.002** (0.000)	0.000 (0.000)	0.005** (0.000)	-0.002** (0.000)	-0.009** (0.000)	-0.012** (0.000)
Number of elderly individuals in the household	0.001 (0.000)	-0.004** (0.000)	-0.006** (0.000)	0.089** (0.001)	0.108** (0.001)	0.050** (0.001)
Household per capita non-labour income	-0.001** (0.000)	-0.001** (0.000)	-0.002** (0.000)	0.010** (0.000)	0.014** (0.000)	-0.008** (0.000)
Head of household	0.091** (0.001)	0.083** (0.000)	0.076** (0.000)	0.304** (0.001)	0.301** (0.001)	0.284** (0.001)
Rural areas	0.024** (0.000)	0.009** (0.000)	0.006** (0.000)	-0.164** (0.001)	-0.155** (0.001)	-0.141** (0.001)
Region II	0.006** (0.001)	0.021** (0.000)	0.010** (0.001)	-0.121** (0.002)	-0.104** (0.003)	-0.031** (0.002)
Region III	0.006** (0.001)	0.019** (0.001)	0.019** (0.001)	-0.090** (0.003)	-0.041** (0.003)	0.001 (0.003)
Region IV	-0.004** (0.001)	0.010** (0.001)	0.006** (0.001)	-0.024** (0.003)	0.081** (0.003)	0.014** (0.002)
Region V	-0.003** (0.001)	0.005** (0.001)	0.000 (0.001)	-0.025** (0.002)	0.047** (0.002)	0.021** (0.002)
Region VI	-0.009** (0.001)	-0.002** (0.001)	0.017** (0.001)	0.018** (0.003)	0.033** (0.002)	0.015** (0.002)
Region VII	-0.010** (0.001)	0.015** (0.001)	0.013** (0.001)	-0.032** (0.002)	0.062** (0.002)	0.052** (0.002)
Region VIII	-0.022** (0.001)	-0.006** (0.001)	-0.013** (0.001)	-0.062** (0.002)	-0.046** (0.002)	-0.050** (0.002)
Region IX	-0.049** (0.002)	0.008** (0.001)	-0.014** (0.001)	-0.055** (0.002)	0.034** (0.002)	-0.044** (0.002)
Region X	-0.002 (0.001)	0.002* (0.001)	-0.003** (0.001)	-0.038** (0.002)	0.025** (0.002)	0.015** (0.002)
Region XI	0.016** (0.002)	0.014** (0.001)	0.003* (0.001)	-0.034** (0.005)	0.098** (0.004)	0.105** (0.004)
Region XII	0.007** (0.001)	0.028** (0.000)	-0.014** (0.001)	-0.009* (0.004)	0.138** (0.003)	0.045** (0.003)
Region XIII	0.006** (0.001)	0.026** (0.001)	0.015** (0.001)	0.042** (0.002)	0.107** (0.002)	0.080** (0.002)
Number of observations	2 367 356	2 756 380	3 122 811	2 625 127	2 958 500	3 311 258
Adj. R <sup>2</sup>	0.10	0.14	0.14	0.13	0.12	0.11

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASEN database) and OECD estimations.

Table A1.2. Employment equations: Prime-age individuals, probit models<sup>1</sup>

	Males			Females		
	1990	1996	2003	1990	1996	2003
Years of schooling						
8-11	0.028** (0.001)	0.034** (0.000)	0.048** (0.000)	0.007** (0.001)	0.067** (0.001)	0.067** (0.001)
12	0.057** (0.001)	0.052** (0.000)	0.072** (0.000)	0.118** (0.001)	0.152** (0.001)	0.161** (0.001)
12+	0.050** (0.001)	0.045** (0.000)	0.060** (0.001)	0.312** (0.001)	0.330** (0.001)	0.314** (0.001)
Age	0.026** (0.000)	0.016** (0.000)	0.030** (0.000)	0.029** (0.000)	0.017** (0.000)	0.020** (0.000)
Age squared	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)
Number of children in the household						
Less than 3 years	0.009** (0.000)	0.013** (0.000)	0.016** (0.000)	-0.069** (0.001)	-0.096** (0.001)	-0.074** (0.001)
3-5 years	0.010** (0.000)	0.017** (0.000)	0.012** (0.001)	-0.054** (0.001)	-0.061** (0.001)	-0.056** (0.001)
6-10 years	0.002** (0.000)	0.014** (0.000)	-0.002** (0.000)	-0.045** (0.001)	-0.049** (0.001)	-0.057** (0.001)
11-17 years	0.003** (0.000)	0.003** (0.000)	0.004** (0.000)	-0.004** (0.000)	-0.006** (0.000)	-0.010** (0.000)
Number of elderly individuals in the household	-0.001* (0.001)	-0.011** (0.000)	-0.008** (0.000)	0.082** (0.001)	0.093** (0.001)	0.042** (0.001)
Household per capita non-labour income	0.001** (0.000)	-0.001** (0.000)	-0.002** (0.000)	0.013** (0.000)	0.017** (0.000)	-0.004** (0.000)
Head of household	0.135** (0.001)	0.113** (0.001)	0.144** (0.001)	0.277** (0.001)	0.292** (0.001)	0.262** (0.001)
Rural areas	0.043** (0.001)	0.030** (0.000)	0.029** (0.001)	-0.140** (0.001)	-0.135** (0.001)	-0.103** (0.001)
Region II	0.011** (0.002)	0.035** (0.001)	0.020** (0.001)	-0.107** (0.002)	-0.098** (0.003)	-0.023** (0.002)
Region III	0.007** (0.002)	0.023** (0.001)	0.026** (0.001)	-0.071** (0.003)	-0.029** (0.003)	-0.026** (0.003)
Region IV	-0.005** (0.002)	0.011** (0.001)	-0.013** (0.001)	-0.011** (0.003)	0.084** (0.003)	0.015** (0.002)
Region V	-0.011** (0.002)	0.004** (0.001)	-0.020** (0.001)	-0.023** (0.002)	0.039** (0.002)	-0.004** (0.002)
Region VI	-0.008** (0.002)	-0.007** (0.001)	0.023** (0.001)	0.005* (0.002)	0.023** (0.002)	0.019** (0.002)
Region VII	-0.007** (0.002)	0.025** (0.001)	0.018** (0.001)	-0.012** (0.002)	0.070** (0.002)	0.043** (0.002)
Region VIII	-0.041** (0.002)	-0.017** (0.001)	-0.036** (0.001)	-0.056** (0.002)	-0.049** (0.002)	-0.050** (0.002)
Region IX	-0.044** (0.002)	0.002 (0.001)	-0.045** (0.002)	-0.042** (0.002)	0.032** (0.002)	-0.045** (0.002)
Region X	-0.003 (0.002)	0.002* (0.001)	-0.006** (0.001)	-0.025** (0.002)	0.027** (0.002)	0.015** (0.002)
Region XI	0.013** (0.003)	0.028** (0.002)	0.014** (0.002)	-0.013** (0.005)	0.102** (0.005)	0.104** (0.004)
Region XII	0.000 (0.002)	0.054** (0.001)	0.014** (0.002)	0.009* (0.004)	0.138** (0.004)	0.023** (0.004)
Region XIII	0.009** (0.001)	0.036** (0.001)	0.006** (0.001)	0.044** (0.002)	0.113** (0.002)	0.070** (0.002)
Number of observations	2 367 356	2 756 380	3 122 811	2 625 127	2 958 500	3 311 258
Adj. R <sup>2</sup>	0.07	0.10	0.10	0.11	0.12	0.09

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASEN database) and OECD estimations.

***Prime-age males***

The results of the probit estimations for prime-age males, also reported in Table A1.1, show a strong participation effect associated with educational attainment, although it is less so for the most educated men than it is for women. Participation increases with age, albeit in a non-linear fashion, the number of children in the household, especially for children aged 6-10 years, and residency in rural areas. Conversely, participation falls with the number of elderly people in the household and household income. As in the case of females, the results are similar for the employability equations (Table A1.2).

***Female youths***

The results of the probit estimations for female youths, reported in Table A1.3, show that the probability of participation rose with educational attainment in 2003, although the effect was the converse for some educational levels in 1990 and 1996. Participation tends to fall with the number of children in the household, especially for those aged less than 3 years. The association between youth participation and the number of elderly individuals in the household was not robust across time periods. Household income was found to be negatively correlated with the probability of participation in 1996 and 2003. Being head of household raises the probability of participation, while living in a rural area decreases it. Again, as in the case of prime-age individuals, the results are similar for employability (Table A1.4).

***Male youths***

In the case of male youths, for whom both participation and employment rates fell during 1990-2003, the estimation results reported in Table A1.3 suggest that there is a negative relationship between participation and educational attainment. The number of young children in the household, especially those aged less than 6 years, increases the probability of participation, while the converse is true for children aged 6-17 years. Household income decreases the probability of participation, while being head of household increases it. Living in rural areas increases the probability of participating in the labour market. The results of the employability regressions are similar to those for participation (Table A1.4).

**Decomposition analysis**

Based on the methodology proposed by Yun (2004), described in Box 1, the results of the probit regressions can be used to decompose changes in participation rates over time between differences in variables and differences in coefficients. The decomposition analysis focuses on changes in labour force participation and employment over the period 1990-2003.

***Labour force participation***

The results of the decomposition analysis are reported in Table A1.5 for both prime-age females and youths. During 1990-2003, prime-age female participation rose by 14 percentage points. Changes in both variables and coefficients contributed to the increase. Most of the change in variables was due to changes in educational attainment, which contributed to raising participation, age effects, the number of young children in the household and head-of-household status. As for changes in coefficients, the findings are less clear-cut, but changes in educational attainment suggest that returns to education increased considerably during the period of analysis. Changes in the number of children aged less than 3 years and between 6 and 17 years reduced participation, possibly suggesting that obstacles related to access to child care became more stringent in 2003 relative to 1990. Changes in regional coefficients were also important.

Table A1.3. Labour force participation equations: Youths, probit models<sup>1</sup>

	Males			Females		
	1990	1996	2003	1990	1996	2003
Years of schooling						
8-11	-0.163** (0.002)	-0.249** (0.002)	-0.044** (0.002)	-0.014** (0.001)	-0.044** (0.001)	0.100** (0.002)
12	-0.254** (0.002)	-0.291** (0.002)	-0.038** (0.002)	0.061** (0.002)	0.079** (0.002)	0.236** (0.002)
12+	-0.495** (0.001)	-0.569** (0.001)	-0.409** (0.001)	0.018** (0.002)	-0.061** (0.002)	0.032** (0.002)
Age	0.513** (0.003)	0.509** (0.003)	0.578** (0.003)	0.404** (0.003)	0.304** (0.003)	0.435** (0.003)
Age squared	-0.010** (0.000)	-0.009** (0.000)	-0.011** (0.000)	-0.009** (0.000)	-0.006** (0.000)	-0.009** (0.000)
Number of children in the household						
Less than 3 years	0.117** (0.001)	0.070** (0.001)	0.102** (0.001)	-0.068** (0.001)	-0.062** (0.001)	-0.038** (0.001)
3-5 years	0.042** (0.001)	0.092** (0.002)	0.024** (0.002)	-0.025** (0.001)	0.004** (0.001)	-0.013** (0.001)
6-10 years	-0.008** (0.001)	0.050** (0.001)	-0.005** (0.001)	0.042** (0.001)	0.038** (0.001)	-0.004** (0.001)
11-17 years	0.024** (0.001)	-0.014** (0.001)	-0.016** (0.001)	0.036** (0.001)	0.018** (0.001)	-0.001** (0.001)
Number of elderly individuals in the household	-0.073** (0.002)	-0.026** (0.002)	-0.035** (0.001)	0.037** (0.001)	-0.006** (0.001)	-0.002 (0.001)
Household per capita non-labour income	-0.025** (0.000)	-0.014** (0.000)	-0.028** (0.000)	0.005** (0.000)	-0.003** (0.000)	-0.031** (0.000)
Head of household	0.273** (0.002)	0.354** (0.003)	0.262** (0.003)	0.067** (0.004)	0.160** (0.004)	0.152** (0.003)
Rural areas	0.227** (0.002)	0.084** (0.002)	0.106** (0.002)	-0.070** (0.001)	-0.061** (0.001)	-0.056** (0.001)
Region II	0.058** (0.004)	-0.010* (0.005)	-0.033** (0.004)	-0.093** (0.003)	-0.004 (0.003)	0.020** (0.003)
Region III	0.038** (0.005)	-0.030** (0.006)	-0.085** (0.004)	-0.065** (0.004)	0.001 (0.004)	-0.007 (0.004)
Region IV	0.021** (0.004)	0.090** (0.004)	-0.014** (0.004)	-0.043** (0.003)	0.088** (0.004)	-0.032** (0.003)
Region V	-0.065** (0.004)	0.077** (0.004)	-0.009** (0.003)	0.011** (0.003)	0.079** (0.003)	0.034** (0.003)
Region VI	0.008 (0.004)	0.121** (0.004)	-0.033** (0.004)	0.060** (0.003)	0.153** (0.004)	0.027** (0.003)
Region VII	0.008 (0.004)	0.165** (0.004)	-0.039** (0.004)	0.021** (0.003)	0.105** (0.004)	0.047** (0.003)
Region VIII	-0.012** (0.004)	-0.018** (0.004)	-0.074** (0.003)	-0.033** (0.003)	0.056** (0.003)	-0.018** (0.002)
Region IX	-0.092** (0.004)	0.093** (0.004)	-0.151** (0.003)	0.024** (0.003)	0.117** (0.004)	0.010** (0.003)
Region X	0.068** (0.004)	0.007 (0.004)	-0.077** (0.003)	0.006* (0.003)	0.068** (0.003)	0.036** (0.003)
Region XI	0.117** (0.009)	0.152** (0.008)	0.030** (0.008)	0.081** (0.007)	0.092** (0.007)	0.118** (0.007)
Region XII	0.108** (0.006)	0.130** (0.006)	0.004 (0.006)	0.043** (0.005)	0.178** (0.006)	0.044** (0.006)
Region XIII	0.012** (0.003)	0.113** (0.004)	0.029** (0.003)	0.044** (0.003)	0.104** (0.003)	0.096** (0.002)
Number of observations	1 238 528	1 271 887	1 404 420	1 279 224	1 258 138	1 344 917
Adj. R <sup>2</sup>	0.37	0.38	0.38	0.15	0.16	0.21

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASEN database) and OECD estimations.

Table A1.4. Employment equations: Youths, probit models<sup>1</sup>

	Males			Females		
	1990	1996	2003	1990	1996	2003
Years of schooling						
8-11	-0.123** (0.002)	-0.197** (0.002)	-0.048** (0.002)	-0.021** (0.001)	-0.046** (0.001)	0.064** (0.002)
12	-0.147** (0.002)	-0.221** (0.002)	-0.040** (0.002)	0.034** (0.001)	0.047** (0.002)	0.164** (0.002)
12+	-0.338** (0.001)	-0.460** (0.001)	-0.286** (0.001)	0.006** (0.001)	-0.058** (0.001)	0.032** (0.002)
Age	0.455** (0.003)	0.477** (0.003)	0.463** (0.003)	0.288** (0.002)	0.236** (0.002)	0.257** (0.002)
Age squared	-0.009** (0.000)	-0.009** (0.000)	-0.009** (0.000)	-0.006** (0.000)	-0.005** (0.000)	-0.005** (0.000)
Number of children in the household						
Less than 3 years	0.090** (0.001)	0.056** (0.001)	0.071** (0.001)	-0.065** (0.001)	-0.050** (0.001)	-0.034** (0.001)
3-5 years old	0.046** (0.001)	0.079** (0.002)	0.018** (0.001)	-0.013** (0.001)	0.008** (0.001)	-0.002 (0.001)
6-10 years old	-0.018** (0.001)	0.038** (0.001)	-0.006** (0.001)	0.032** (0.001)	0.029** (0.001)	-0.009** (0.001)
11-17 years old	0.018** (0.001)	-0.017** (0.001)	-0.015** (0.001)	0.024** (0.000)	0.023** (0.001)	0.001 (0.001)
Number of elderly individuals in the household	-0.056** (0.002)	-0.019** (0.002)	-0.037** (0.001)	0.025** (0.001)	-0.002 (0.001)	-0.006** (0.001)
Household per capita non-labour income	-0.016** (0.000)	-0.010** (0.000)	-0.021** (0.000)	0.011** (0.000)	0.003** (0.000)	-0.017** (0.000)
Head of household	0.244** (0.002)	0.344** (0.003)	0.233** (0.003)	0.069** (0.004)	0.148** (0.003)	0.122** (0.003)
Rural areas	0.267** (0.002)	0.121** (0.002)	0.135** (0.002)	-0.047** (0.001)	-0.035** (0.001)	-0.013** (0.001)
Region II	0.069** (0.004)	0.054** (0.005)	-0.055** (0.003)	-0.070** (0.002)	-0.012** (0.003)	0.105** (0.004)
Region III	0.073** (0.005)	-0.045** (0.005)	-0.079** (0.004)	-0.042** (0.003)	0.001 (0.004)	0.087** (0.004)
Region IV	0.001 (0.004)	0.069** (0.004)	-0.045** (0.003)	-0.051** (0.002)	0.049** (0.003)	0.061** (0.003)
Region V	-0.061** (0.004)	0.090** (0.004)	-0.059** (0.003)	-0.016** (0.002)	0.064** (0.003)	0.084** (0.003)
Region VI	0.042** (0.004)	0.125** (0.004)	-0.064** (0.003)	0.028** (0.003)	0.111** (0.004)	0.109** (0.004)
Region VII	0.040** (0.004)	0.158** (0.004)	-0.051** (0.003)	0.017** (0.003)	0.075** (0.003)	0.085** (0.003)
Region VIII	0.001 (0.004)	-0.021** (0.004)	-0.100** (0.002)	-0.038** (0.002)	0.036** (0.003)	0.058** (0.003)
Region IX	-0.055** (0.004)	0.084** (0.004)	-0.160** (0.002)	0.005 (0.003)	0.061** (0.003)	0.081** (0.003)
Region X	0.055** (0.004)	0.008** (0.004)	-0.100** (0.003)	-0.002 (0.003)	0.031** (0.003)	0.116** (0.003)
Region XI	0.078** (0.009)	0.185** (0.008)	-0.041** (0.006)	0.057** (0.006)	0.075** (0.006)	0.190** (0.008)
Region XII	0.081** (0.007)	0.092** (0.006)	0.014** (0.005)	0.023** (0.005)	0.165** (0.006)	0.128** (0.006)
Region XIII	0.044** (0.003)	0.123** (0.003)	-0.012** (0.003)	0.023** (0.002)	0.068** (0.002)	0.156** (0.002)
Number of observations	1 238 528	1 271 887	1 404 420	1 279 224	1 258 138	1 344 917
Adj. R <sup>2</sup>	0.30	0.34	0.31	0.14	0.16	0.18

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASEN database) and OECD estimations.

Table A1.5. **Decomposition of female labour force participation, 1990 and 2003<sup>1</sup>**Based on the estimations reported in Tables A1.1 and A1.3 ( $\Delta F = -2.8$  for youths and  $-14.1$  for prime-age females)

	Youths				Prime-age females			
	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)
Years of schooling								
8-11	-0.06	2.20	0.00	0.02	0.00	-0.01	-38.95	276.99
12	-0.85	30.09	-0.07	2.30	-0.96	6.84	-40.00	284.48
12+	-0.05	1.94	0.00	0.14	-1.70	12.08	-10.45	74.29
Age	7.10	-2 51.51	-0.80	28.29	-3.09	21.95	605.59	-4 306.38
Age Squared	-5.98	211.98	0.33	-11.65	3.83	-27.23	-502.65	3 574.39
Number of children								
Less than 3 years	-1.04	36.88	-0.01	0.36	-0.57	4.03	2.42	-17.22
3-5 years	-0.35	12.45	0.00	0.08	-0.78	5.52	-1.13	8.05
6-10 years	0.06	-1.99	0.02	-0.64	-0.20	1.45	3.68	-26.15
11-17 years	0.26	-9.11	0.04	-1.45	0.00	0.01	15.28	-108.63
Number of elderly	-0.06	1.97	0.01	-0.19	-0.06	0.42	12.19	-86.66
Head of household	-0.09	3.02	0.00	0.07	-1.39	9.92	-2.16	15.36
Urban	-0.56	19.81	0.00	0.08	-0.65	4.64	-10.07	71.60
Household income	-0.23	7.98	0.05	-1.93	-0.23	1.64	52.24	-371.50
Region II	0.11	-3.72	-0.01	0.22	0.01	-0.07	-7.20	51.18
Region III	0.01	-0.33	0.00	0.04	0.00	-0.02	-3.80	27.03
Region IV	0.03	-1.18	0.00	0.02	0.01	-0.04	-3.58	25.46
Region V	0.01	-0.39	0.00	0.10	0.00	0.02	-11.30	80.37
Region VI	0.04	-1.46	0.00	-0.06	0.00	0.02	0.40	-2.86
Region VII	-0.01	0.42	0.00	0.07	-0.01	0.04	-11.74	83.47
Region VIII	-0.06	2.01	0.00	0.09	-0.03	0.20	-4.25	30.24
Region IX	-0.03	1.14	0.00	-0.04	-0.01	0.05	-1.70	12.11
Region X	0.00	-0.18	0.00	0.09	0.00	0.02	-8.85	62.93
Region XI	0.00	-0.12	0.00	0.01	0.00	-0.01	-2.03	14.41
Region XII	0.00	-0.07	0.00	0.00	0.00	0.01	-1.15	8.16
Metropolitan Region	0.00	-0.16	-0.03	0.92	-0.02	0.12	-38.42	273.22
<b>Total</b>	<b>-1.7</b>	<b>61.7</b>	<b>-0.5</b>	<b>16.9</b>	<b>-5.9</b>	<b>41.6</b>	<b>-7.6</b>	<b>54.4</b>

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASSEN database) and OECD estimations.

In the case of female youths, the participation rate rose by almost 3 percentage points during 1990-2003. Changes in variables accounted for the bulk of this increase, especially educational attainment, the number of young children in the household (less than 6 years of age) and residency in urban areas. In the case of coefficients, most of the overall change is explained by age effects.

With regards to males, the results of the decomposition analysis are reported in Table A1.6. In the case of prime-age individuals, participation rose by 0.2 percentage points during 1990-2003 due essentially to changes in variables. The variable whose change contributed the most is educational attainment, while age effects and changes in head-of-household status decreased participation. With regards to youths, there was a sizeable drop in the participation rate, although it remains higher than that of females. Changes in variables accounted for most of this trend, especially in the case of educational attainment (above 11 years of schooling), age effects, residency in an urban area and household income. Changes in coefficients also reduced participation, predominantly through age effects.



Table A1.6. **Decomposition of male labour force participation, 1990 and 2003<sup>1</sup>**Based on the estimations reported in Tables A1.1 and A1.3 ( $\Delta F=9.7$  for youths and  $\Delta F=-0.2$  for prime-age males)

	Youths				Prime-age males			
	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)
Years of schooling								
8-11	-0.28	-2.84	0.11	1.13	-0.01	5.12	-0.04	27.23
12	1.49	15.31	0.14	1.40	-0.38	250.62	-0.03	21.79
12+	1.33	13.68	0.01	0.11	-0.14	93.19	-0.02	14.68
Age	4.13	42.35	3.90	40.01	-2.99	1 969.07	-1.30	858.87
Age Squared	-3.27	-33.61	-1.54	-15.84	3.24	-2 137.47	0.44	-292.62
Number of children								
Less than 3 years	0.61	6.27	0.00	-0.04	0.12	-77.22	-0.01	5.89
3-5 years	0.21	2.16	0.00	-0.03	0.21	-135.56	0.00	3.13
6-10 years	-0.01	-0.09	0.00	0.02	0.05	-31.07	-0.01	3.84
11-17 years	0.16	1.59	-0.08	-0.82	0.01	-3.87	-0.01	6.87
Number of elderly	0.04	0.43	0.01	0.09	0.00	0.92	0.01	-3.66
Head of household	0.73	7.52	0.00	-0.04	0.53	-352.60	0.00	-0.11
Urban	0.98	10.01	-0.04	-0.37	0.22	-141.79	0.02	-10.09
Household income	0.79	8.15	-0.01	-0.11	0.05	-30.29	0.01	-3.81
Region II	-0.01	-0.06	-0.01	-0.07	0.00	1.34	0.00	0.82
Region III	0.00	-0.01	0.00	-0.05	0.00	-0.14	0.00	1.33
Region IV	-0.01	-0.09	0.00	-0.04	0.00	-1.38	0.00	1.70
Region V	-0.04	-0.37	0.01	0.12	0.00	0.09	0.00	1.08
Region VI	0.00	0.00	0.00	-0.05	0.00	-0.37	-0.01	6.66
Region VII	0.00	0.03	-0.01	-0.06	0.00	0.29	-0.01	5.83
Region VIII	-0.02	-0.17	-0.02	-0.18	-0.02	11.40	0.00	2.68
Region IX	0.02	0.19	-0.01	-0.11	-0.01	5.41	-0.01	4.52
Region X	0.00	0.04	-0.02	-0.23	0.00	0.29	0.00	-0.51
Region XI	-0.01	-0.07	0.00	-0.01	0.00	-0.25	0.00	-0.33
Region XII	-0.01	-0.05	0.00	-0.02	0.00	-0.25	0.00	-0.83
Metropolitan Region	-0.02	-0.16	0.02	0.16	0.00	1.05	-0.03	17.79
<b>Total</b>	<b>6.8</b>	<b>70.2</b>	<b>2.4</b>	<b>25.0</b>	<b>0.9</b>	<b>-573.5</b>	<b>-1.0</b>	<b>672.8</b>

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASEN database) and OECD estimations.

### ***Employability***

The results of the decomposition analysis are reported in Table A1.7 for both prime-age females and youths. The sharp increase in prime-age female employment during 1990-2003, as in the case of participation, was due to a combination of changes in variables and coefficients. As for changes in variables, differences in educational attainment and in the number of young children in the household (less than 10 years old), head-of-household status and the number of elderly individuals in the household explain most of the increase in employment. In the case of coefficients, most of the increment in employment is explained by age effects.

Table A1.7. **Decomposition of female employment, 1990 and 2003<sup>1</sup>**

Based on the estimations reported in Tables A1.2 and A1.4 ( $\Delta F = -0.2$  for youths and  $\Delta F = -11.6$  for prime-age females)

	Youths				Prime-age females			
	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)
Years of schooling								
8-11	-0.10	58.01	1.52	-913.00	0.00	-0.02	1.00	-8.63
12	-0.50	298.78	1.68	-1 008.44	-1.03	8.91	0.76	-6.55
12+	-0.02	10.47	0.26	-159.14	-1.68	14.50	0.10	-0.89
Age	5.25	-3 154.09	-9.41	5 652.01	-3.96	34.28	-24.24	209.59
Age Squared	-4.29	2 576.01	5.68	-3 413.36	4.41	-38.11	17.52	-151.52
Number of children								
Less than 3 years	-1.03	618.89	0.31	-184.28	-0.48	4.15	-0.02	0.18
3--5 years	-0.18	109.40	0.06	-38.90	-0.68	5.89	0.01	-0.07
6--10 years	0.04	-26.02	-0.52	313.53	-0.18	1.54	-0.28	2.43
11--17 years	0.18	-106.81	-0.84	505.89	0.00	0.02	-0.23	1.97
Number of elderly	-0.04	23.42	-0.14	84.67	-0.06	0.49	-0.35	3.02
Head of household	-0.09	52.97	0.04	-25.46	-1.27	10.99	-0.08	0.73
Urban	-0.39	233.30	0.18	-107.71	-0.57	4.97	0.38	-3.29
Household income	-0.53	318.67	-1.40	840.13	-0.30	2.59	-1.28	11.09
Region II	0.08	-49.42	0.28	-169.70	0.01	-0.07	0.18	-1.59
Region III	0.01	-3.71	0.08	-48.22	0.00	-0.02	0.05	-0.47
Region IV	0.04	-25.73	0.21	-124.85	0.00	-0.02	0.06	-0.54
Region V	-0.02	10.56	0.39	-236.55	0.00	0.02	0.13	-1.12
Region VI	0.02	-12.00	0.14	-85.24	0.00	0.01	0.05	-0.39
Region VII	-0.01	5.94	0.17	-104.24	0.00	0.02	0.20	-1.75
Region VIII	-0.07	42.51	0.52	-313.88	-0.03	0.22	0.08	-0.67
Region IX	-0.01	4.34	0.20	-118.49	-0.01	0.05	0.00	0.00
Region X	0.00	0.94	0.31	-184.10	0.00	0.02	0.17	-1.51
Region XI	0.00	-1.47	0.02	-13.81	0.00	0.00	0.04	-0.38
Region XII	0.00	-0.64	0.03	-18.15	0.00	-0.01	0.01	-0.07
Metropolitan Region	0.00	-1.48	2.26	-1 357.09	-0.02	0.16	0.64	-5.57
<b>Total</b>	<b>-1.6</b>	<b>982.8</b>	<b>2.0</b>	<b>-1 228.4</b>	<b>-5.8</b>	<b>50.6</b>	<b>-5.1</b>	<b>44.0</b>

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASEN database) and OECD estimations.

In the case of female youths, employment remained relatively stable during the period of analysis. While changes in variables (especially the number of young children in the household and household income) contributed to raising employment, those in coefficients (especially educational attainment) acted to decrease it.

With regards to males, the results of the decomposition analysis are reported in Table A1.8. The fall in prime-age male employment by about 0.5 percentage points during 1990-2003 is explained essentially by changes in variables. Changes in educational attainment increased employment: the sum of all educational changes is equivalent to more than one percentage point increment in employment. This was nevertheless offset by other effects, especially changes in head-of-household status. Employment also fell for male youths, especially through changes in variables. Changes in educational attainment, age and residency in an urban area are the most important changes in variables. In the case of changes in coefficients, age effects were most important.

Table A1.8. **Decomposition of male employment, 1990 and 2003<sup>1</sup>**Based on the estimations reported in Tables A1.2 and A1.4 ( $\Delta F=9.3$  for youths and 0.5 for prime-age males)

	Youths				Prime-age males			
	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)	Variables	$\Delta F$ (in %)	Coefficients	$\Delta F$ (in %)
Years of schooling								
8-11	-0.25	-2.62	0.10	1.00	-0.01	-2.29	0.00	-0.60
12	1.06	10.96	0.10	1.02	-0.65	-140.09	0.00	-0.43
12+	1.12	11.58	-0.02	-0.24	-0.40	-85.45	0.00	-0.29
Age	4.40	45.60	5.52	57.31	-4.67	-1 006.28	-0.08	-16.67
Age Squared	-3.61	-37.41	-2.17	-22.54	4.80	1 034.26	0.02	3.92
Number of children								
Less than 3 years	0.57	5.87	0.00	-0.04	0.12	26.86	0.00	-0.12
3-5 years	0.28	2.90	-0.01	-0.08	0.19	41.15	0.00	-0.03
6-10 years	-0.02	-0.25	0.01	0.11	0.02	3.63	0.00	0.16
11-17 years	0.14	1.49	-0.11	-1.10	0.01	1.58	0.00	-0.09
Number of elderly	0.04	0.40	0.00	0.05	0.00	0.64	0.00	0.08
Head of household	0.71	7.37	0.00	0.00	0.85	183.15	0.00	-0.77
Urban	1.31	13.57	-0.05	-0.51	0.35	76.40	0.00	-0.19
Household income	0.60	6.20	-0.04	-0.37	-0.03	-6.43	0.00	0.23
Region II	-0.01	-0.09	-0.01	-0.15	0.00	-0.76	0.00	-0.03
Region III	0.00	-0.03	-0.01	-0.10	0.00	0.05	0.00	-0.03
Region IV	0.00	0.00	-0.01	-0.08	0.00	0.47	0.00	0.03
Region V	-0.04	-0.43	0.00	-0.04	0.00	-0.10	0.00	0.08
Region VI	0.00	0.01	-0.02	-0.22	0.00	0.11	0.00	-0.17
Region VII	0.02	0.19	-0.02	-0.20	0.00	-0.06	0.00	-0.15
Region VIII	0.00	0.01	-0.05	-0.51	-0.03	-7.04	0.00	-0.04
Region IX	0.01	0.14	-0.03	-0.35	-0.01	-1.82	0.00	0.00
Region X	0.00	0.04	-0.04	-0.43	0.00	-0.14	0.00	0.02
Region XI	-0.01	-0.05	0.00	-0.02	0.00	0.06	0.00	0.00
Region XII	0.00	-0.05	0.00	-0.02	0.00	0.00	0.00	-0.01
Metropolitan Region	-0.07	-0.71	-0.08	-0.82	0.00	-0.49	0.00	0.09
<b>Total</b>	<b>6.2</b>	<b>64.7</b>	<b>3.1</b>	<b>31.7</b>	<b>0.5</b>	<b>117.4</b>	<b>-0.1</b>	<b>-14.6</b>

1. Standard errors are reported in parentheses. (\*\*) and (\*) denote statistical significance at the 1% and 5% levels, respectively.

Source: MIDEPLAN (CASSEN database) and OECD estimations.

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