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Gender wage gap of comparable workers: an application to Chile, 1992-2009.

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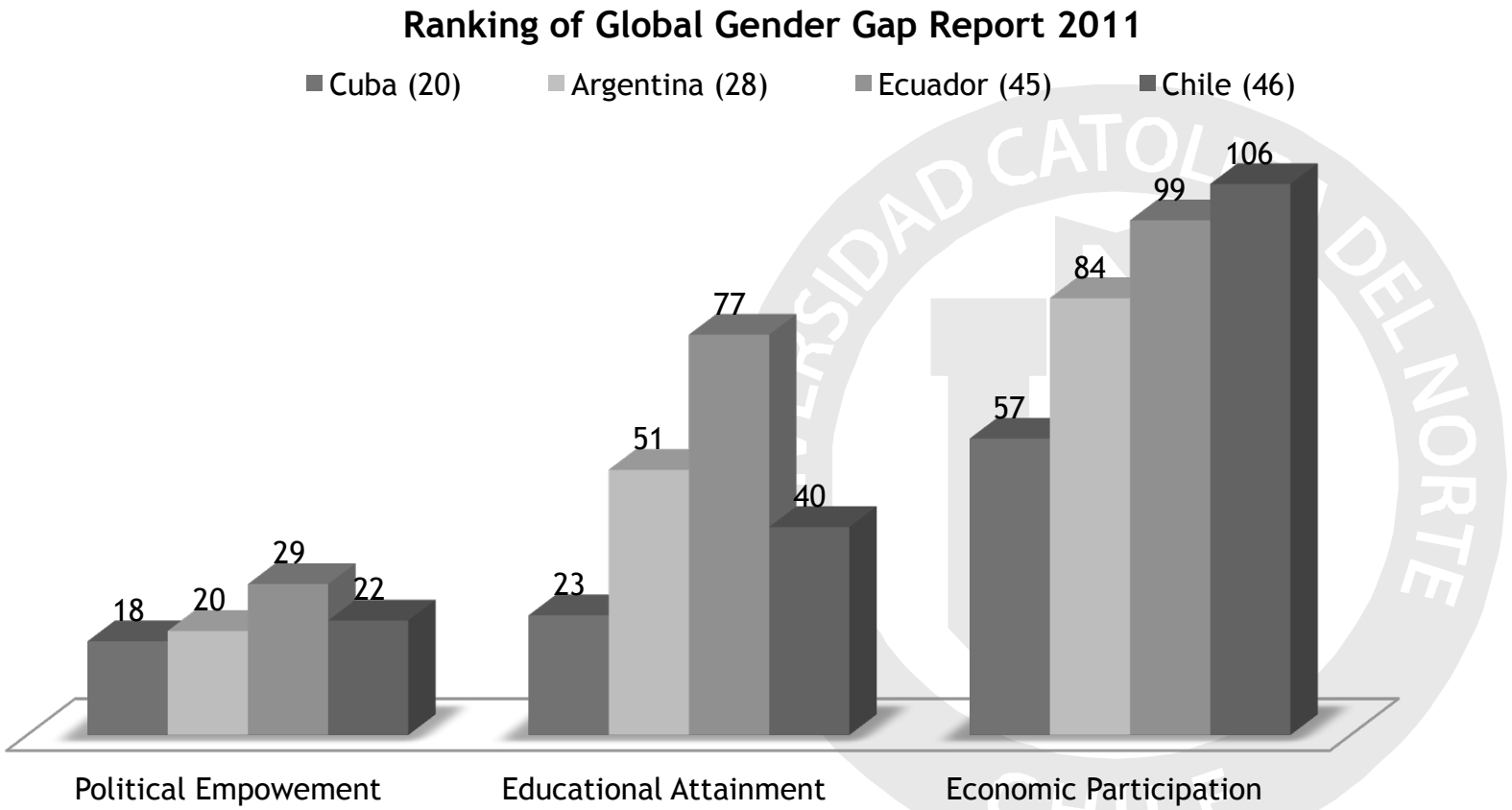
Motivation 1



Motivation 2

- Fuentes, Palma, & Montero (2005) suggest a reduction in this gap between 1990 and 2003 from 58.5% to 28.2%. However, they suggest an increment in 2000 [Cuadernos de Economia]

- Recently, Perticara & Bueno (2009) using a unique sample with information of current labor experience, estimate a gap between 11% and 18% for 2002 and 2006, but interestingly they also suggest that the gap has widened during last years [CEPAL Review].

- Bravo, Sanhueza & Urzua (2008) indicate a significant gap for 2002, but it depends on the college degree varying between 6% to 38% [BID Working Paper]

- Montenegro (2001) estimates a larger gap in the upper quantiles of the conditional wage distribution with a range between 10%-40% for 1990 and 1998 [BID Working Paper].

Context

"While Chile shows an interesting jump on the Global Gender Gap Report 2011, its performance on economic participation and gender wage gap is still poor. When the literature is visited, this also presents several problems such as a lack of analysis for long time series, disagreement about levels of gap and its temporal evolution, ignorance about the gender gap after 2006. Additionally, the labor economics literature provides new techniques beyond standard Oaxaca-Blinder (OB) decomposition, which have not been explored using the Chilean case."

Research questions

Main questions

- How has been the temporal evolution of the gender gap in Chile between 1992-2009 when hte comparable workers are considered?

Secondary questions

- How much difference exist between this estimation and previous literature?
- Do the results support the existence of an increment of gender wage gap
- Are all the set of female workers discriminated against comparable male workers?

Methodology

OB computes how much men would earn by using the shadow prices for female workers:

$$\overline{w}^0 - \overline{w}^1 = \hat{\beta}^0 \overline{x}^0 - \hat{\beta}^1 \overline{x}^1 = \hat{\beta}^1 \left(\overline{x}^1 - \overline{x}^0 \right) + \left(\hat{\beta}^1 - \hat{\beta}^0 \right) \overline{x}^0$$

- Selection bias generated by who are not participating in the labor market (Paredes & Riveros, 1994).
- The linear function form between characteristics and wages such as OB suggests (Dolton and Makepeace (1987) and Munroe (1988)).
- OB provides an average gap, but it losses information about its empirical distribution.

While these points have been discussed by the literature, a scarce attention on the implicit ***counterfactual*** assumption imposed by OB.

Methodology

This counterfactual could not exist for some workers and combinations of male characteristics (Barsky et al. (2002), Black et al. (2008)). Formally the expected wages:

$$E[w|M] = \int_{S^M} g^M(X)\, dF^M(X), E[w|F] = \int_{S^F} g^F(X)\, dF^F(X)$$

A gross gender gap:

$$\Delta = \int_{S^M} g^M(X)\, dF^M(\cdot) - \int_{S^F} g^F(X)\, dF^F(\cdot)$$

Let's assume that only a portion of the support is overlapped between male and female workers.

Methodology

This information let decomposing the gender gap.

$$\Delta = \left[\int_{\bar{S}^F} g^M(X) \frac{dF^M(X)}{\mu^M(\bar{S}^F)} - \int_{S^F} g^M(X) \frac{dF^M(X)}{\mu^M(S^F)} \right] \mu^M(\bar{S}^F)$$

$$+ \int_{S^M \cap S^F} g^M(X) \left[\frac{dF^M(X)}{\mu^M(S^F)} - \frac{dF^M(X)}{\mu^M(S^M)} \right](X)$$

$$+ \int_{S^M \cap S^F} \left[g^M(X) - g^F(X) \right] \frac{dF^M(X)}{\mu^F(S^M)}$$

$$+ \left[\int_{S^M} g^F(X) \frac{dF^F(X)}{\mu^F(\bar{S}^M)} - \int_{\bar{S}^M} g^F(X) \frac{dF^F(X)}{\mu^F(\bar{S}^M)} \right] \mu^F(\bar{S}^M)$$

Or equivalently:

$$\Delta = \Delta_M + \Delta_X + \Delta_0 + \Delta_F$$

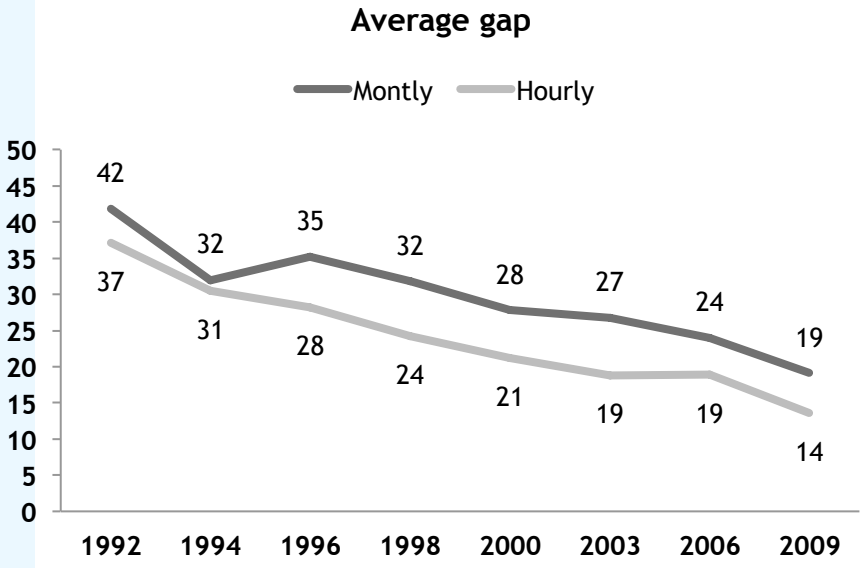
Econometric strategy

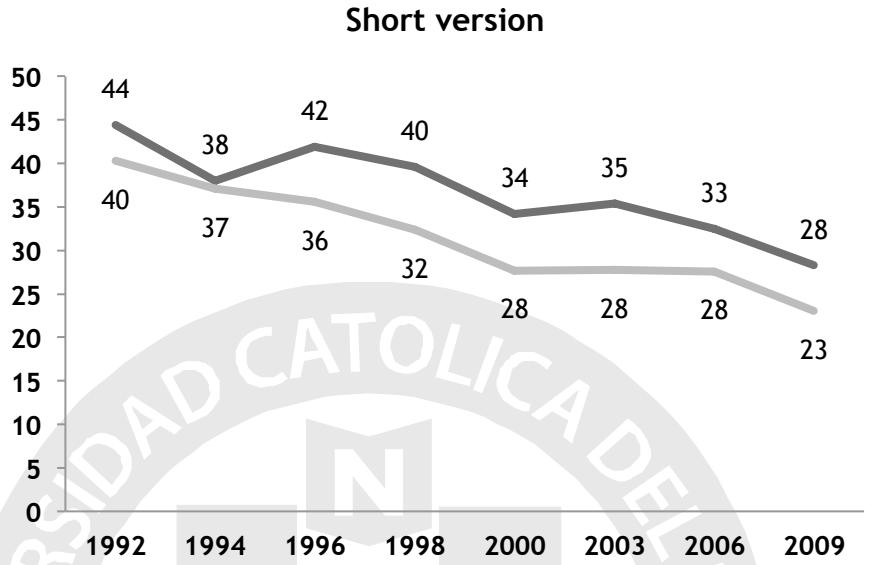
- Step 1: We need to know how many male and female workers we have in our data set.
- Step 2: We need to know in what dimension (variables) the workers are labeled as comparable.
- Step 3: We need a metric to measure how much different are workers before and after matching.
- Step 4: We need to warranty the theoretical assumptions for any type of matching process.

Data

- This paper uses the National Socioeconomic Characterization Survey (CASEN) between 1992 and 2009.
- Only workers between fourteen and sixty-four years old which report a positive wage and who live in an urban area are considered
- The workers with less than 30 hours per week were dropped to avoid the distortion of temporary contracts.
- Military workers and who do not specify occupations or economic sectors were dropped of the sample.
- Years of education, experience, occupation, economic sector, marital status and household head are used as independent variables.
- Observations with studentized residuals or standard residuals greater than 3 (absolute value) were deleted.
- Additional *dfbeta* tests were also estimated for each regression, but they do not discard any observation.
- The most of estimations are weighted by regional weight variable.

Results


Average gap
Montly
Hourly
50
45
40
35
30
25
20
15
10
5
0
42
32
35
32
28
27
24
19
37
31
28
24
21
19
19
14
1992
1994
1996
1998
2000
2003
2006
2009


Short version
50
45
40
35
30
25
20
15
10
5
0
44
38
42
40
34
35
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28
40
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32
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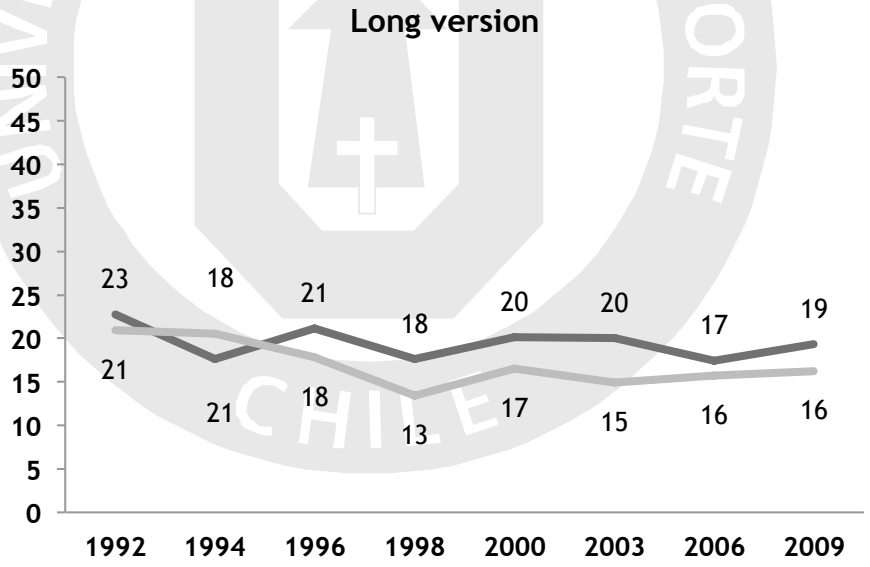
1992
1994
1996
1998
2000
2003
2006
2009


Long version
50
45
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5
0
23
18
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18
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21
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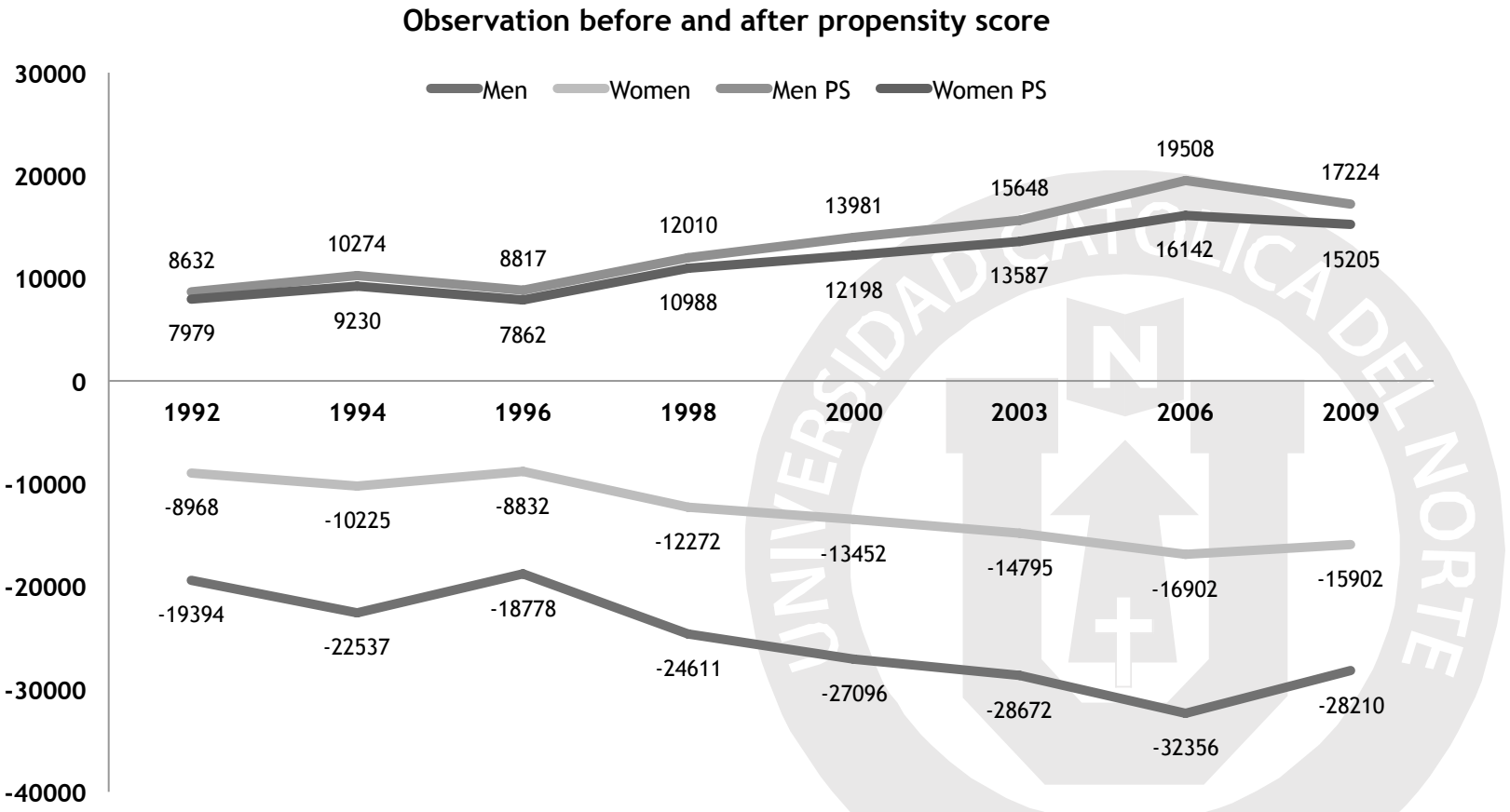
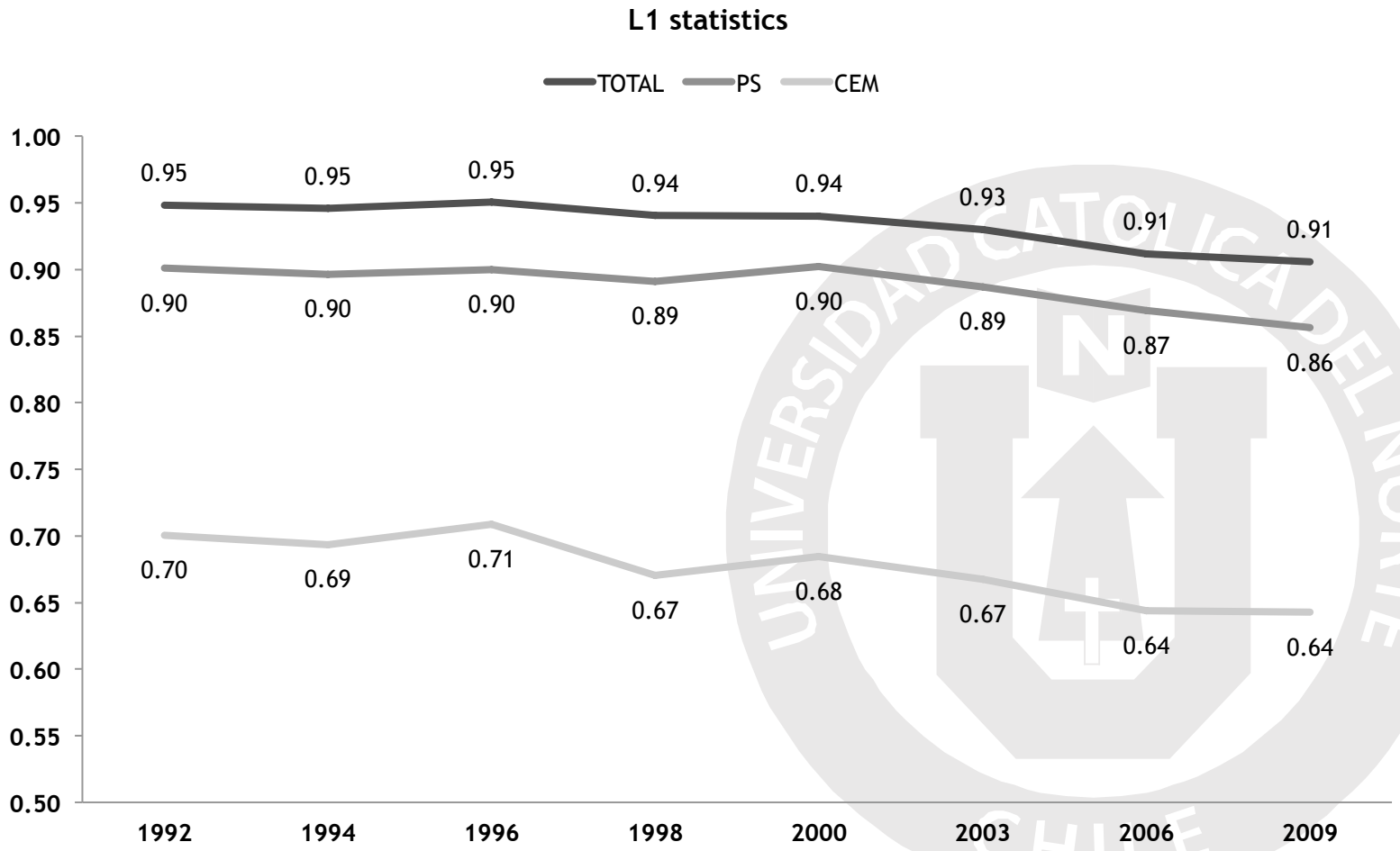
1992
1994
1996
1998
2000
2003
2006
2009

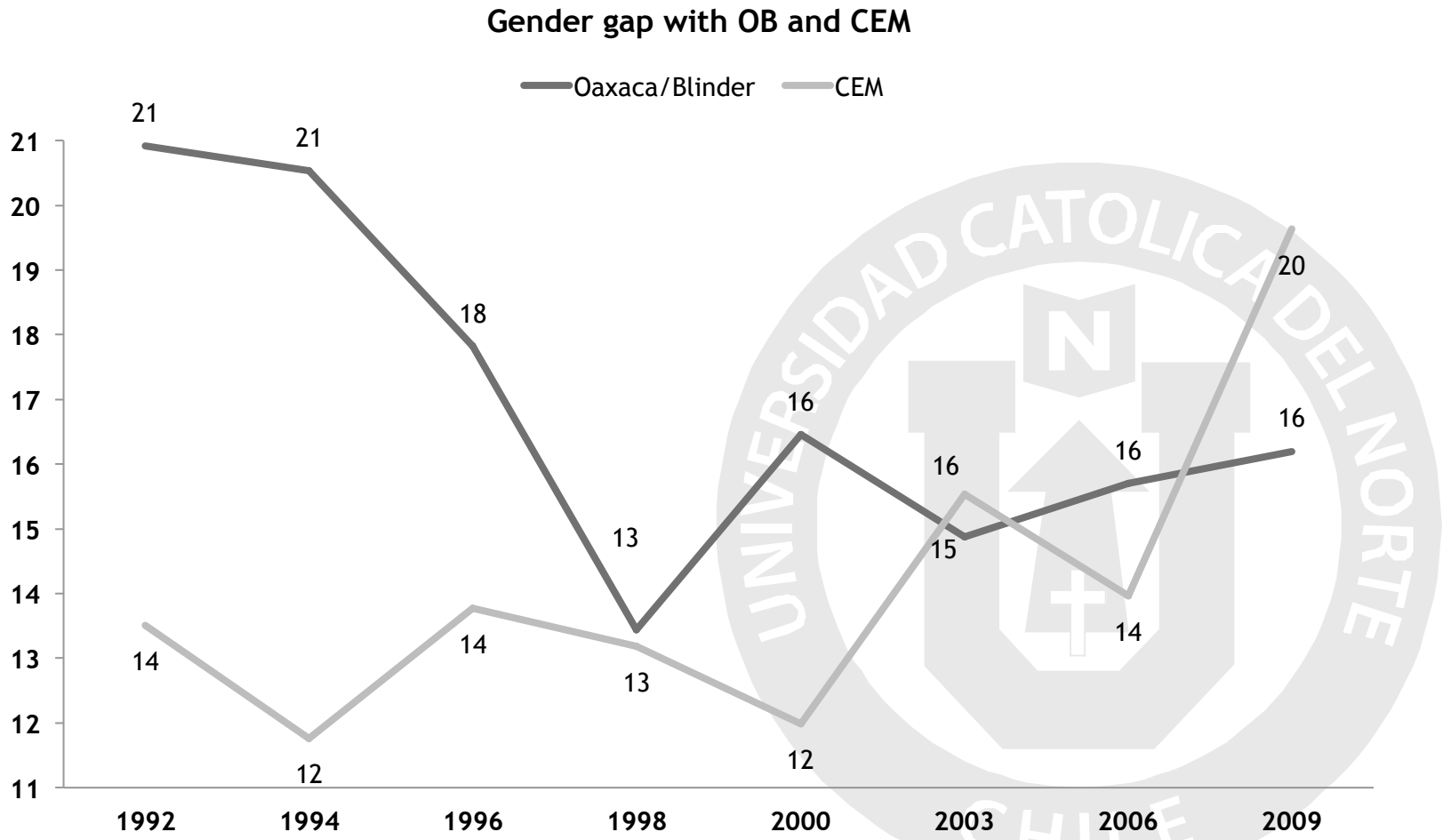
Results


Observation before and after propensity score
Men
Women
Men PS
Women PS
30000
20000
10000
0
-10000
-20000
-30000
-40000
1992
1994
1996
1998
2000
2003
2006
2009
8632
10274
8817
12010
13981
15648
19508
17224
7979
9230
7862
10988
12198
13587
16142
15205
-8968
-10225
-8832
-12272
-13452
-14795
-16902
-15902
-19394
-22537
-18778
-24611
-27096
-28672
-32356
-28210

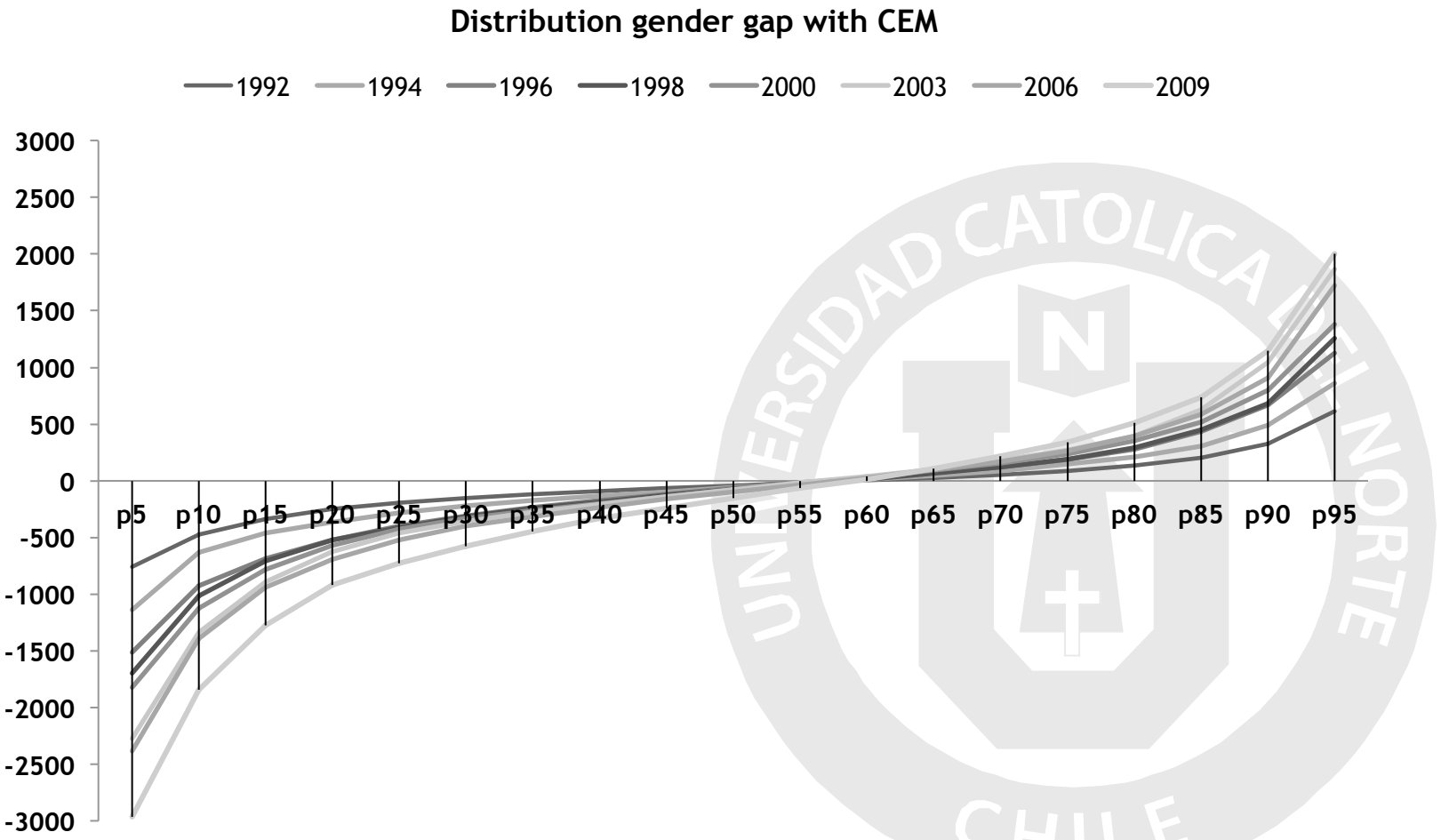
Results


L1 statistics
TOTAL
PS
CEM
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.95
0.95
0.95
0.94
0.94
0.93
0.91
0.91
0.90
0.90
0.90
0.89
0.90
0.89
0.87
0.86
0.70
0.69
0.71
0.67
0.68
0.67
0.64
0.64
1992
1994
1996
1998
2000
2003
2006
2009

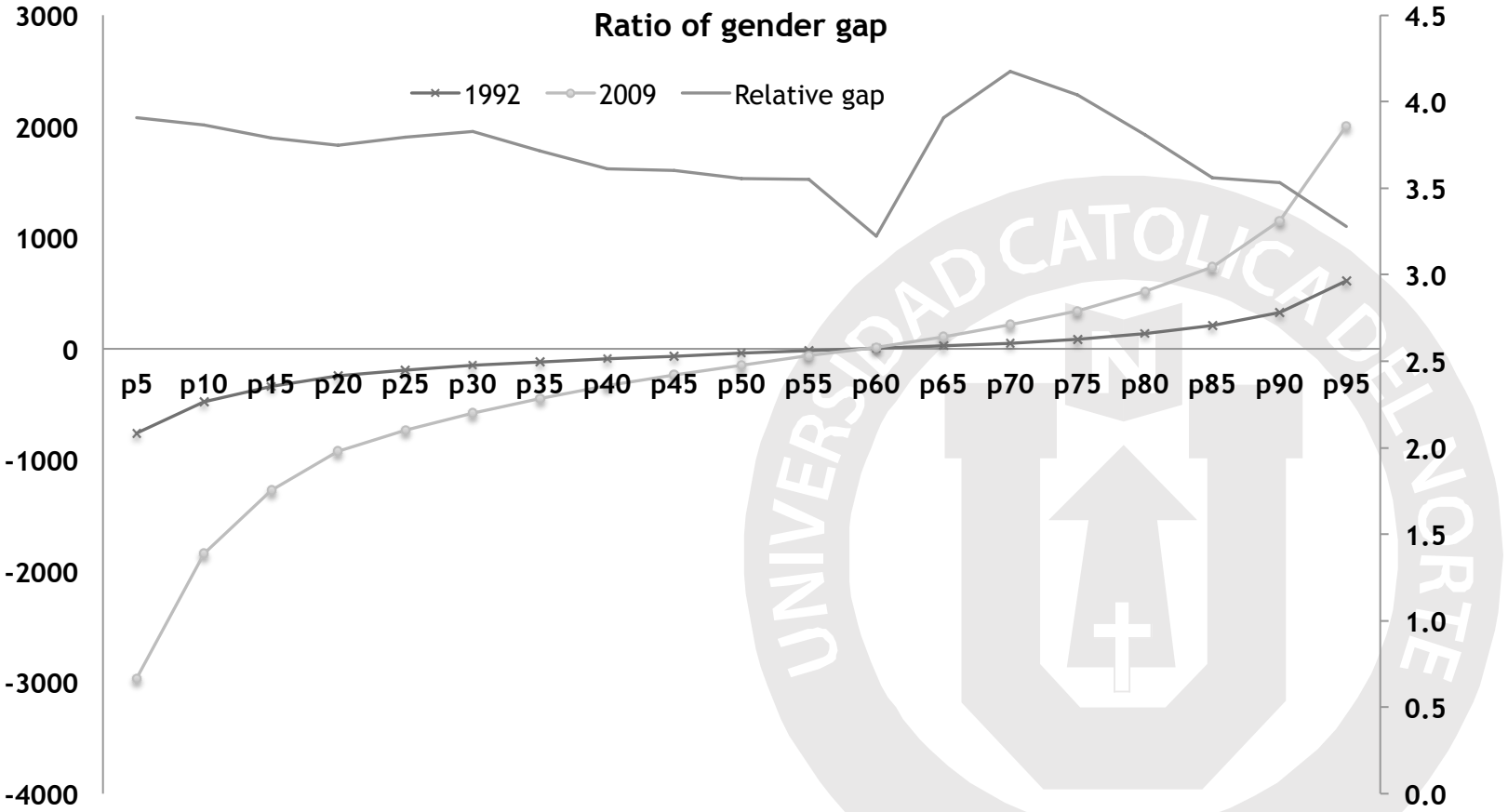
Results


Gender gap with OB and CEM
Oaxaca/Blinder
CEM
21
20
19
18
17
16
15
14
13
12
11
1992
1994
1996
1998
2000
2003
2006
2009
21
21
18
13
16
15
16
16
20
14
12
14
13
12
16
14

Results


Distribution gender gap with CEM
1992
1994
1996
1998
2000
2003
2006
2009
3000
2500
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-2500
-3000
p5
p10
p15
p20
p25
p30
p35
p40
p45
p50
p55
p60
p65
p70
p75
p80
p85
p90
p95

Results


Ratio of gender gap
1992
2009
Relative gap
3000
2000
1000
0
-1000
-2000
-3000
-4000
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
p5
p10
p15
p20
p25
p30
p35
p40
p45
p50
p55
p60
p65
p70
p75
p80
p85
p90
p95

Conclusions

- CEM estimates and average gender gap much lower than Oaxaca-Blinder during most of the period. This implies that some male workers who earn high wages are not comparable and they should not be considered for wage gap.
- CEM estimates also support the previous results provided by Perticara & Bueno (2009) regarding the widening of the gender wage gap since 2000. Between 2000 and 2009, the gap grew from 12% until 20%. This result also supports the conclusion derived from Sixth World Economic Forum's Global Gender Gap Report 2011 and additional attention of policy maker must be paid to the labor markets.
- The 60% of comparable workers show a gender gap against women, and around of 40% of female workers earn higher wages than comparable male workers. However, the gap against women is much larger than against male workers. In 2000 the gender gap was around 12% on average, but it is around 20% in 2009. The situation is not different when the gap distribution is analyzed. Between 1992 and 2009 the gap against women has increased around 3.6 times.