

Social Protection and Private Coping Strategies during Recessions: evidence from Chile

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Keywords: social protection, private coping strategies, recessions, Chile

JEL classification: H53, J21, J48

November, 2014

Abstract

This article analyzes the Chilean experience in coping with the 1999 downturn, triggered by the Asian financial crisis, and how the implemented policy reforms have enabled reconciling strong growth in social spending with a balanced fiscal policy. Unlike the last global crisis (the Great Recession), the 1999 crisis enables us to look at the long-term sustainability of the Chilean reforms adopted after this episode. The Chilean experience can suggest innovative social protection solutions for European countries, in a way to make long-term social investments and medium-term fiscal consolidation mutually supportive and sustainable. The analysis reveals that the fiscal discipline and the robust public institutions developed by Chile *before* and *after* the crisis have strengthened its social protection policies and have reduced its vulnerability to new turbulent episodes. Specifically, the 1990s public debt reduction, the Copper Stabilization Fund created in 1987, the adoption of the structural surplus rule of 1 percent of GDP introduced in 2000, and the new combination of monetary and fiscal policy adopted after the crisis have reduced and mitigated the exposure of the Chilean economy to external crises. Accordingly, the new Chilean policy framework allowed the implementation of a countercyclical fiscal policy during 2000-2003 and during the Great Recession. The article also examines the private coping mechanisms adopted during the crisis by estimating econometrics models based on micro-data from the Chilean *Encuesta Nacional de Empleo* (ENE) and other data sources. The evidence suggests that there is a tendency for families to cope with the effects of the crisis by increasing underused labor of wives, but not of children. Paternal unemployment does not lead to a significant decrease on school attendance of children.

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1 INTRODUCTION

The Eurozone crisis has generated discussion about the appropriate design of macroeconomic policy both in terms of dealing with the contemporary situation and minimizing the risks of future crises (Bird and Mandilaras, 2013). Peripheral countries have run large current account deficits to maintain high levels of consumption and investment despite postponing necessary structural reforms such as those in the public finances (Obstfeld, 2013). Also, European countries have increasingly acknowledged the advantages of social protection policies as effective substitutes for parts of their costly welfare systems (Brunori and O'Reilly, 2010). Policies aimed at tackling vulnerability can potentially deliver social security without dampening fiscal sustainability and economic growth. Among developing countries, Brazil, Mexico, India, and Chile are considered leaders in developing innovative social protection solutions (European Report on Development, 2010).

In this context, this article aims to be an introduction of the Chilean experience in coping with the 1999 crisis and how the policies adopted before and (especially) after that crisis have enabled reconciling strong growth in social spending with a balanced fiscal policy. The Chilean experience could serve to explore innovative social protection solutions for European countries, in a way to make long-term social investments and medium-term fiscal consolidation mutually supportive and sustainable under improved financial and economic governance.

The article examines the private coping mechanisms and government policy responses adopted in Chile during the 1999 downturn¹. Using micro-data from the

¹ This paper analyses the 1999 downturn, triggered by the Asian financial crisis, instead of the most recent 2008 financial crisis (the Great Recession) because the former allows us to look at its short and long run effects, since the consequences of the 2008 crisis and the subsequent European crises are still in place.

Chilean *Encuesta Nacional de Empleo* (ENE), I analyze three possible coping strategies: the response of Chilean wives' labor supply to husbands' job loss, and the response of Chilean children's (15-18 years old) labor supply and school attendance to fathers' job loss. It is important to understand these strategies when designing better social protection policies aimed at preventing negative long-term outcomes derived from short-term crises. The analysis of the government policy responses is based on a review of previous research on this topic, focusing primarily on Chilean studies about the causes and consequences of the 1999 downturn.

There are three main reasons explaining why Chile is important. First, the Chilean economy is considered a successful case of development, and its experience is used as a paradigm among developing countries. Since the late 1980s, it has experienced positive rates of economic growth with poverty decreasing from 39% in 1990 to 15% in 2009. Second, these remarkable results have been reached by combining fiscal discipline with the development of strong public institutions, two key aspects for tackling poverty, reducing the impact of shocks, and promoting sustainable growth and inclusive development in the long run. Third, Chile is the earliest reformer in the Latin American region, enhancing the role of market forces and increasing financial integration into the global economy, which has yielded better opportunities but also greater concerns about economic insecurity.

Chile suffered a severe change in external conditions during 1998. The Asian Crisis reached global proportions, particularly affecting Russia and the Latin American countries. This suddenly reduced the capital inflows toward Chile from an average of 6.8% of GDP in 1990-1997 to 2.5% in 1998. Likewise, the terms of trade decreased 12.5% in 1998, which turned into a current account deficit that peaked at 6.5% of GDP in the third quarter.

This article shows that the adjustment policy adopted by Chilean authorities during 1998 exacerbated the effects of these initial external shocks. There was a lack of

coordination between the fiscal and monetary policies; the monetary adjustment coincided with an expansionary fiscal policy. Thus, the pressure of the adjustment almost exclusively relied on the monetary policy (Corbo and Tessada, 2003). In addition, there was an excessive apprehension that a high pass-through from the depreciation to inflation would jeopardize the inflation target for the following year. This situation derived into a disproportionate monetary adjustment, which turned into an illiquidity episode in 1998 that induced contractive effects in the economy beyond what was necessary to adjust the domestic expenditure.

The fiscal discipline and the strong public institutions developed *before* and *after* the crisis strengthened Chilean social protection policies. Specifically, the 1990s public debt reduction, the Copper Stabilization Fund, the 2000 structural surplus fiscal rule, and the new combination of monetary and fiscal policy have reduced and/or mitigated the risk and hence the vulnerability of the Chilean economy to new turbulent episodes. This new Chilean policy framework allowed the implementation of a countercyclical fiscal policy during 2000-2003 and during the last crisis (the Great Recession).

In order to mitigate the effects of unemployment during crises, Chile launched a contributory unemployment insurance (UI) in 2002, which combines savings and market-type risk pooling aspects. Its mix of personal accounts and redistribution reduces moral hazard problems endemic to traditional European UI schemes and keeps costs at manageable levels. This might be an attractive alternative for countries that want to reform their unemployment protection schemes combining unemployment insurance with strong incentives for the unemployed to seek employment.

According to econometric models, the evidence suggests that there is a tendency for families to cope with the effects of the 1999 crisis by increasing underused labor of wives. The probability of labor force participation of wives increases by 5.3% if their husbands are involuntarily terminated from employment (which the literature denominates as the Added Worker Effect, AWE). In contrast, the probability of labor

force participation of older children (15-18 years old) decreases by 1.98% if their fathers become unemployed. Also, the unemployment of the fathers does not imply a significant decrease on school attendance of their children.

The rest of the paper is organized as follows. Section II summarizes the nature of the 1999 downturn and its effects at the macroeconomic and microeconomic levels. Section III analyzes the principal coping mechanisms adopted by households. Section IV presents an assessment of the government policy responses during the covariate shock, including macroeconomic policies, labor policies, and employment programs. Section V concludes.

2 NATURE OF THE SHOCKS AND EFFECTS

2.1 The Nature of the 1999 downturn and its macroeconomic consequences

In 1998 Chile's external conditions greatly changed. The Asian Crisis, that initially only affected emerging Asian economies, reached global levels, particularly affecting Russia and Latin America. As a result, the Chilean economy lost resources equivalent to 6.2% of GDP in 1999 as consequence of the combined effect of the decline in the terms of trade, the fall of exports volume, and the reduction of capital inflows.

These damaging external conditions coincided with an economy already overheating, with a high current account deficit derived from a large expansion of the domestic expenditures in 1997. For example, in the first quarter of 1998, the GDP was growing at an annually rate of 6.8% whereas domestic expenditure was increasing by 12.3% (see Figure 1 and Table 1).

The combination of these factors caused a quick increase in the current account deficit, which reached 6.5% of GDP in the third quarter of 1998. As a result and with the

beginning of several speculative currency attacks, it became necessary to adopt an adjustment policy in order to correct the expenditure path.²

The period of adjustment, initiated in 1998, coincided with an expansionary fiscal policy. This situation derived into a disproportionate monetary adjustment. At the end of 1998, the economy went through an illiquidity episode caused by a substantial increase of the interest rates, which severely affected private sector investment and consumption. This had an immediate effect on unemployment, which rose to an average of 9.7% in 1999, up from an average of 6.8% during the previous five years. At the same time, the economy accumulated four consecutive quarters of negative GDP growth (1998.4-1999.3), ending up with a negative GDP variation of -0.8% in 1999. This was the first year with negative growth since the Latin American crisis debt episode of 1982-1983.

Overall, while economic effects of crises were moderate and short-lived, social impacts such as unemployment were more persistent. In fact, GDP per capita returned to its pre-crisis level in 2000, one year after the 1999 downturn, whereas six years after the beginning of the slowdown, unemployment was still greater than the 1990-1997 average.

2.2 The effects of the crisis at the microeconomic level (individuals/households)

The rhythm of poverty reduction in Chile decelerated at the end of the 1990s, when the downturn in economic activity took place (see Table 2 and Giovagnoli *et al.*, 2005). There was a heterogeneous situation among groups and sectors (Feres, 2001): rural poverty significantly decreased between 1998 and 2000 (3.8%), whereas the urban poverty slightly decreased during the same period (0.6%).

² Although the monetary policy focused on an inflation target, it also considered the size of the current account deficit. In contrast to other independent Central Banks, the Central Bank of Chile is also responsible for the exchange rate system and policy.

The small reduction in poverty between 1998 and 2000 (1.1%) contrasts with the general perception of a decline in socioeconomic conditions during this period. Indeed, the reduction of the poverty appears to be related to certain distributional issues (Feres, 2001); unlike the middle and high deciles, the average household income of the lowest deciles grew between 1998 and 2000.

Unemployment levels among different groups of workers were quite varied. Cowan *et al.* (2005) analyze this issue in detail. Table 3 describes their analysis of the 1997-2000 unemployment rates by years of education and age. We observe that the increase in unemployment was especially severe for people with 12 years of schooling (high school graduates) or more. By age, we see that the increase in unemployment was higher for those under 25 years-old, in particular, among people between 19 and 24 years-old.

Overall, the effect of the 1999 crisis was concentrated in the middle and high deciles, with an increase in unemployment and a reduction in real income above what happened at the aggregate level. These results are consistent with the findings from De Ferranti *et al.* (2000), who show that middle and upper classes are those most affected by moderate recessions.

3 PRIVATE COPING MECHANISMS

It is important to understand the private coping mechanisms used by households to minimize the effects from crises. This can help to create better monitoring and timely assessment of the impacts of shocks at the household level. It also allows for creating policy interventions and design social protection measures that can prevent negative long-term outcomes (Mukherjee and Nayyar, 2011).³

³ For further evidence on the effect of economic crises on vulnerable groups and the coping mechanisms adopted by these groups see, for example, Glewwe and Hall (1998), De Ferranti *et al.* (2000), Parker and Skoufias (2004), Skoufias and Parker (2006), Kohara (2010), Zhang (2011) and Kar (2013).

The private coping mechanisms adopted by households that are analyzed in this article cover the response of Chilean wives' labor supply to husbands' job loss, and the response of Chilean children's (15-18 years old) labor supply and school attendance to fathers' job loss.⁴

3.1 Changes in labor supply of wives in response to the husbands' unemployment

Are wives encouraged to increase their labor supply as a result of their husbands' unemployment more than they are discouraged from doing so because of poor labor market conditions during the crisis? This is the main question of this section.

Figure 2 presents the (detrended and deseasonalized) evolution of the labor force participation (LF) of Chilean wives between 1996 and 2005. It also shows the (lag of) employment participation over the economically active population of household-heads.⁵ There is a positive correlation between these two series (0.6), which can also be observed in the graph. However, this correlation becomes negative in the middle of the crisis, starting during late 1998 and ending at the beginning of 2000. This suggests that in the middle of the crisis, the decrease in employment opportunities for household heads motivated the labor force participation of spouses and partners. However, this association could arise from other factors related to both variables at the same time,

⁴ Clearly, there are other private coping mechanisms adopted by the households during crises. For example, households may be forced to sell their productive assets (including land), spend their savings, defer having children, and decrease their investments in other forms of human capital of children (see e.g., Morduch, 1999; Skoufias, 2003, Calero *et al.*, 2009; Mukherjee and Nayyar, 2011). Also, they might retire earlier to cope with unemployment in old age and move from private health insurance affiliation (ISAPRES) to public health affiliation (FONASA). Likewise, firms adopt private coping mechanisms such as increasing their debt, laying off workers, delaying payment of taxes and social security contributions, etc. (see e.g., Mellahi *et al.*, 2009; Kang *et al.*, 2010). I do not analyze these coping mechanisms in this paper. Further research is needed to address these issues.

⁵ The time series are detrended and deseasonalized using a linear time trend and indicator variables for each quarter.

such as changes in the minimum wage or increased employment programs. As a result, we need to further control for these factors. This is done in the following Linear Probability Model (LPM), estimated by OLS using repeated cross-section individual data from the 1996-2005 quarters of the Encuesta Nacional de Empleo (ENE):

$$LF_{irt} = \beta_0 + \beta_1 UNEMP_{irt}^H + \beta_2 UNEMP_{irt}^H * URATE_t + Controls_{irt} + \theta_{rt} + \varepsilon_{irt} \quad (1)$$

where LF_{irt} equals 1 if the (female) spouse i living in the region r participates in the labor force during the quarter t and 0 otherwise. $UNEMP_{irt}^H$ equals 1 if the (male) household head of the spouse i is “induced” to unemployment during the quarter t and 0 otherwise. $URATE_t$ is the nationwide unemployment rate in quarter t and $UNEMP_{irt}^H * URATE_t$ is the interaction of these last two variables. $Controls_{irt}$ includes demographic characteristics for both the female spouse i and her husband. θ_{rt} denotes region-by-quarter dummies (interacted region and quarter dummies) to control for all time-varying unobservables at each region and ε_{irt} represents all unobservables affecting labor force participation of spouses⁶.

The main focus is on the effect of the husband’s unemployment status on the probability of the spouse’s labor force participation, which represents the *added worker effect (AWE)*: $AWE_t = \beta_1 + \beta_2 URATE_t$, where β_2 shows how the AWE changes depending on the business cycle, represented by the national unemployment rate ($URATE_t$)⁷.

⁶ The “induced” unemployment is defined as the unemployment caused by an involuntary termination from previous job (being fired or laid off), but not job resignation. The demographic characteristics included for both the wife and husband are age, age squared, years of schooling, years of schooling squared, and number of children under 5 years old. $URATE_t$ in levels is absorbed in the θ_{rt} terms.

⁷ In general, the AWE measures the increased labor supply of spouses in response to their husband’s unemployment. This effect is more likely to exist in countries where wives are less attached to the labor

The identification strategy relies on two main assumptions, which are explained in detail and are informally tested in the Appendix. First, the only unobservable determinants of LF_{irt} that influence $UNEMP_{irt}^H$ are assumed to be region-by-quarter specific, varying only between regions and quarters. As a result, all “transitory” factors and unobserved local labor market conditions, such as changes in the minimum wage or the increase on employment programs, are absorbed by θ_{rt} . Second, the “induced”-type of unemployment is assumed to be more exogenously determined compared with all types of unemployment, once we control for demographic characteristics of households, such as age, years of schooling, and number of children⁸. Thus, $UNEMP_{irt}^H$ is assumed to be uncorrelated with ε_{irt} , once we control for demographic characteristics of the households.

Table 4 presents the estimated coefficients from the LPM. Regressions (1) to (6) vary according to the number of controls included in each case. Columns (1) to (3) do not include the interaction term $UNEMP_{irt}^H * URATE_t$, whereas Columns (4) to (6) do include it. Columns (1) to (3) show a significant AWE that increases in magnitude once controlling for demographic characteristics of the household (Column (2)) and region and quarter dummies (Column (3)).

market and women are generally secondary earners. According to the CASEN 2009 survey, the earnings of Chilean female workers represent between 49.1% and 68.3% (depending on the level of education) of male earnings. For further explanation and empirical evidence on the AWE, see, for example, Lundberg (1985), Maloney (1991), Spletzer (1997), Benati (2001), Parker and Skoufias (2004), Juhn and Potter (2007), Kohara (2010), Gong (2011), Sabarwal *et al.* (2011), and Zhang (2011). The empirical evidence is mixed about the magnitude and significance of the AWE as a determinant of female labor supply. Some authors invoke the existence of a discouraged worker effect (e.g., Benati, 2001), whereby spouses may choose to give up job searching during recessions. Other authors argue that the estimated added worker effect is largely explained by unobservable heterogeneity between wives whose husbands have lost their jobs and wives whose husbands have not (e.g., Spletzer, 1997, Maloney, 2001).

⁸ For example, Stephens (2002) stresses the use of involuntary job loss as an exogenous employment shock and argues that estimates of the AWE that treat all unemployed as the same will likely underestimate the magnitude of the true effect. Stephens (2002), Kohara (2010), Gong (2011), and Hardoy and Schone (2012) are among the studies that base their estimations on involuntary job loss.

The estimated AWE of Column (3) indicates that the probability of labor force participation of wives increases by 5.3% if their husbands are induced into unemployment. This represents an increase of roughly 17% on the mean labor force participation of wives, an important magnitude. For example, this represents around a 60% of the effect of having at least one child under 5 years old (which decreases the mean participation by 30% approximately). These results are consistent with previous evidence for other Latin American countries such as Argentina (Cerrutti, 2000; Lee and Cho, 2005), Brazil (Fernandes and Felicio, 2005) and Asian countries (Lim, 2000 and Kohara, 2010).

Columns (4) to (6) describe how the AWE varies according to the business cycle, which is represented by the interaction term $UNEMP_{irt}^H * URATE_t$. Column (5) includes standard region and quarter dummies. Column (6) includes region-by-quarter dummies, which is the preferred specification. In all three cases the coefficients β_1 and β_2 are jointly significant (see F statistics and p-values in the last two rows of the table). Once including region and quarter dummies (Columns (5) and (6)), the coefficient of the interaction becomes significant. The results of Column (6) indicate a significant AWE that increases when the unemployment rate rises: an increase of 1% on $URATE_t$ raises the AWE by 0.4%. These numbers indicate that the AWE increases the labor force participation of wives by 17.4% if $URATE_t$ is at the 1999 level (crisis period), and in 13.4 if $URATE_t$ is at the 1997 level (pre-crisis period). In other words, the magnitude of the AWE during the crisis period is found to be 30% larger than during the period of economic prosperity⁹.

⁹ This difference is smaller than what Parker and Skoufias (2004) find for Mexico (the closest paper regarding this topic): the magnitude of the AWE during the Peso crisis period is found to be twice as large as during the period of economic prosperity.

3.2 Changes in labor supply and school attendance of children (15-18 years old) in response to the householder's unemployment

Table 5 presents the same exercise as before but using the labor force participation of male householders' children between 15 and 18 years old instead of wives. Unlike the previous case, Column (3) shows a negative AWE or a discouraged worker effect (DWE); the probability of labor force participation of children decreases by 1.98% if their fathers are induced into unemployment. This effect is more pronounced in the case of male children compared with female children (results not shown). According to the preferred estimates (Column (6)), this DWE is somewhat attenuated during the crisis, but not enough to change the sign of this effect.

Paternal unemployment does not imply a significant decrease on school attendance of their children (results not shown). These no-effect results are consistent with what De Ferranti *et al.* (2000) find for other Latin American countries and what Skoufias and Parker (2006) find for Mexico.

Overall, this evidence suggests that there is a tendency of families to cope the effects of the crisis by increasing the underused labor of wives, but not of children. The main effects are for wives whose husbands suffer an induced-type of unemployment spell in the middle of the 1999 crisis. Since men represent more than 85% of the household heads participating in the labor force, these findings are also consistent with the countercyclical pattern of female labor force participation rates.

4 ASSESMENT OF THE CHILEAN GOVERNMENT POLICY RESPONSE

4.1 Main policy interventions adopted after the crisis

4.1.1 Macroeconomic policies adopted

The mix of the severe external shocks and the sudden increase in the current account deficit in 1998 forced Chile to adopt an adjustment policy in order to correct the

expenditure path. However, there was a lack of coordination between the fiscal and monetary policies adopted after the crisis: the period of adjustment coincided with an expansionary fiscal policy, such that the monetary and fiscal policy operated at cross purposes (Corbo and Tessada, 2003).

The fiscal budget for 1998 was built under the assumption that the GDP would grow by 7%, but it only grew by 3.2%. Even though the authorities made three additional adjustments to fiscal expenditures during 1998 (Dirección de Presupuestos, 1999), the pressure of the adjustment almost exclusively relied on monetary policy. Furthermore, the authorities raised public sector wages by 6% and established a three-year plan to increase the nominal minimum wage by more than 10% annually (see next section). These measures made switching more difficult and costly in terms of unemployment.

As a result of this adjustment policy response, the effects of the 1998 external shocks were exacerbated. The lack of coordination between the fiscal and monetary policies adopted during 1997-1998 aggravated the effects of the initial external shocks faced by Chile in the late 1990s (namely reduced capital inflows, worsening terms-of-trade, and contagion of other countries' crisis).

The monetary policy had to address a trade-off between the inflation target and the downturn in real activity. In addition, several speculative attacks on the currency took place as a consequence of the contagion from the Asian crisis to Latin American markets. As the external environment became worse and the expectation of depreciation increased, the market interest rate became much higher than the policy interest rate, seriously affecting the liquidity of the financial market. Indeed, the overnight interest rate reached the highest values of the decade when it exceeded 30% in September 1998 (see Figure 3).

This illiquidity episode, mainly induced by excessive apprehension that a high pass-through from the depreciation to inflation would jeopardize the inflation target for the following year, caused contractive effects in the economy beyond what was necessary

to adjust the domestic expenditure. This severely affected the investment and consumption decisions of the private sector and had prolonged effects on unemployment.

Rigid exchange rate policies without the option of an independent monetary policy may enhance credibility, but can also make adjustment to shocks more painful in the presence of inflexible labor markets or inadequate fiscal policy (De Ferranti *et al.*, 2000). This is what happened in Chile's initial policy response to the turbulent period of 1997-1998. The defense of the exchange rate against the speculative attacks of 1998 preserved the credibility of the monetary policy. However, the inability to achieve a balanced mix of monetary and fiscal policies, along with some inflexibility in the labor markets, implied a costly adjustment to the shocks in terms of unemployment.

With the expectation of a further rise in the current account deficit, the appropriate response should have been a monetary and fiscal policy combination aimed at moderating spending while facilitating the real depreciation required for switching. Given that the exchange rate was already in the lower range of the exchange rate band, the correct mix would have been a restrictive fiscal policy and monetary policy conducted towards supporting nominal and real currency depreciation.¹⁰

In 1999, when the excessive reaction of the domestic expenditure became evident, the authorities began to reorient the monetary and fiscal policy toward an expansive cycle. During 1999, the Central Bank reduced the policy interest rate several times and fiscal expenditures grew 4.5%, 5.3% more than the variation of the GDP in the same period (-0.8%).

¹⁰ Moreover, the beginning of the crisis coincided with an already overheating economy, running a high current account deficit derived from a large expansion of domestic expenditures in 1997. A more restrained fiscal budget for 1998 and lower wage adjustments might have helped in adjusting domestic spending without having to rely exclusively on monetary policy (Corbo and Tessada, 2003).

In the second half of 1999, Chile began to move towards a new mix of monetary and fiscal policy. In September 1999, the Central Bank redefined its inflation target announcing that the objective was now to keep the annual inflation in the range of 2-4%.¹¹ At the same time, it replaced the exchange rate band system with a floating rate. This was implemented in a context of increasing integration with international financial markets. Finally in 2000, the government introduced a fiscal rule based on a structural surplus of 1% of GDP to reaffirm its commitment to fiscal responsibility.¹²

This new policy framework allowed the implementation of a countercyclical fiscal policy during 2000-2003 and 2008-2009, while keeping a substantially low interest rate. Thus, the fiscal policy rule attenuated the impact of the external shocks on the economy and stabilized the financing of social policies. This has become a fundamental element of the Chilean social protection system.

In sum, the mix of monetary and fiscal policies adopted *during* the crisis can be ex-post judged as improper. However, the fiscal discipline and the strong public institutions developed *before* and *after* the crisis strengthened Chilean social protection policies. Specifically, the public debt reduction during the 1990s, the Copper Stabilization Fund, the structural surplus rule of 1% of GDP, and the new combination of monetary and fiscal policy adopted after the crisis have reduced and/or mitigated the risk and hence the vulnerability of the Chilean economy to new turbulent episodes.¹³

¹¹ Previously, the Central Bank set a point estimate of the inflation each year, since 1994.

¹² For further details of the new fiscal rule, see Section 4.2.

¹³ Section 4.2 details these elements since they are the main factors of the macroeconomic policies that have helped in introducing counter cyclicity of social and fiscal policy during the crisis.

4.1.2 Labor policies

Active labor market policies are one of the prevention strategies available at the public level to reduce labor markets risks (Holzmann and Jorgensen, 2001). In this category we can consider the measures adopted to improve the flexibility of the labor market in order to decrease the probability of extensive impacts of crises on unemployment. Another active labor policy that is likely to have consequences on the labor market, especially for unskilled workers, is the enforcement of a legal minimum wage. Among passive labor policies, unemployment insurance schemes mitigate the effects of unemployment. Chile launched a contributory unemployment insurance in 2002, which combines savings and market-type risk pooling aspects.

The Chilean economy took six years to recover from the 1997-1998 turbulent episode compared to three years for East Asian economies and two years for Korea.¹⁴ This slow recovery led to a large debate on the possible lack of flexibility in the Chilean labor market.¹⁵

Since the beginning of the crisis in 1998, the growth of the minimum wage was greater than the growth of the unskilled worker wage. In consequence, the ratio between the minimum wage and the unskilled worker wage rose from 52% in June 1998

¹⁴ Exposition of the Central Bank to the Finance Committee, Senate of Chile, 2005. Korea developed a threefold agreement within the government, workers and firms, who agreed to a reduction in salaries in order to increase the adjustment velocity of the employment.

¹⁵ The discussion on the degree of flexibility of the Chilean labor market and the effects of the minimum wage is quite abundant. See for example Edwards and Edwards (2000), Heckman and Pages (2000), Mizala and Romaguera (2001), Montenegro and Pages (2003), Bergoeing and Morande (2002), Cerda (2005), Cowan *et al.* (2005), Marinakis (2005), Dresdner *et al.* (2010), and Miranda (2012). The main discussion has focused on the effects of labor legislation on employment, and the flexibility of the labor market regarding real wage responses to unemployment during the crises.

to 60% in June 2000. This tendency remained until the middle of 2002, when the minimum wage stayed around 63 percent of the value of the unskilled worker wage.¹⁶

Moreover, during 1998, the government agreed with the Workers Central Union (Central Unitaria de Trabajadores-CUT) to implement a three-year plan to increase the minimum wage by more than 10% in nominal terms. This self-imposed measure tied the hands of the government in the middle of the crisis and hampered the later necessary adjustment of the labor markets. It reduced the policy instruments available to accommodate the shock and increased youth unemployment.¹⁷

In principle, long-term adjustments of the minimum wage can be an effective instrument in reducing the uncertainty of future labor regulation and in decreasing political pressure for excessive increases in the minimum wage during booms. It can also eliminate the costly bargain process that the government and unions otherwise engage in each year. However, in order to become a risk management instrument, a long-term minimum wage increase should consider contingent adjustment mechanisms related to the evolution of the economy and/or the unemployment rate.¹⁸

¹⁶ This result arises as a combination of two effects. First, there was a constant rise in the nominal value of the minimum wage since the beginning of the 1990s, as a result of an intentional policy adopted to increase its real value. Secondly, the increase in the minimum wage at the end of the 1990s coincided with the crisis when there was a significant decline in the economic activity of labor-intensive areas, such as manufacturing and construction.

¹⁷ Some studies have documented the labor market effects of this disconnection between the evolution of the minimum wage and the prevailing economic situation. Overall, they find that this increase in the minimum wage had a significant impact on youth unemployment (e.g. Beyer, 2000; Bravo, 2005; Cowan *et al.*, 2005).

¹⁸ This is the case of the Netherlands, where the minimum wage can remain constant whether or not the unemployment has passed a threshold. The specific rule says that no minimum wage uprating will take place if the national “inactives-to-actives ratio” exceeds 82.6%. This rule can be understood from the importance of the coupling, as any uprating automatically applies to minimum social benefits and thus increases public expenditure related to social security. See more details in Salverda (2009).

On the other hand, since 1999 the government introduced several changes to the labor legislation, which raised the question of whether the government should introduce new changes in order to facilitate the capacity of the economy to create employment and whether these changes could end up encouraging the creation of precarious jobs (Schkolnik, 1999).

There is scope for further advances in this area, such as norms that could increase flexibility in the distribution of work hours, replace severance payment in case of firing by an all-event-payment, and encourage the creation of part-time jobs to increase low female participation rates. In all these cases, reforms should maintain the balance between necessary steps toward more flexibility and the concern about possible abuse by employers and displacement of regular jobs by more precarious jobs.

In May 2002, Chile began to replace a non-contributory unemployment benefit, the *subsidio de cesantia*, financed out of general revenues, with a contributory unemployment insurance system (UI). The new system mixes elements of both savings and market-type risk pooling. Employers and workers contribute monthly to privately managed individual saving accounts and to a common fund that finances the pooled component of the system. The government also contributes a fixed amount to this pooled fund annually.¹⁹

This design attempts to protect against unemployment avoiding the traditional fiscal imbalances and employment search disincentives faced by traditional unemployment insurances. As a result, the UI achieves a balance between economic efficiency and social equity. This is especially relevant for European countries, where it is increasingly

¹⁹ The main support of the pool component is given by the implicit cross subsidies existing within the system (from the less-frequently unemployed workers to the more-frequently unemployed workers and from the high-level income workers to low-level income workers). When becoming unemployed, workers can draw against their individual accounts, and also have limited access to the pool of funds to top-up benefits if they exhaust the balance in their accounts. The benefits decrease within a single spell of unemployment and have a maximum length of five months.

important to deliver social security without dampening fiscal sustainability and economic growth.

Overall, further steps can be made toward the introduction of modern labor protection norms that promote and facilitate the capacity of the economy to create employment. This would reduce the probability of adverse employment shocks in the case of future disturbances.

4.1.3 Employment programs with fiscal support

Since the substantial increase in unemployment during the second half of 1998, the government has implemented active labor policies called “Employment Programs with Fiscal Support.” The acceleration of the investment in labor intensive public infrastructure projects has been also utilized as an instrument to increase the demand for labor in the middle of the downturn.

The employment programs with fiscal support can be broadly classified into two categories: (1) direct employment programs through public institutions like municipalities providing employment; and (2) private employment subsidies or indirect employment subsidies. Programs within the first category offer employment that pays at least the legal minimum wage and requires contribution to the pension/social security system. Programs within the second category offer employment operated by the private sector. Table 6 shows a summary of the main employment programs.

Chile made a substantial effort, in terms of resources and administrative capacity, to develop a new generation of public employment programs after the 1999 downturn. Unlike the 1970s and 1980s, the government diversified its intervention away from direct employment by providing other “active” labor market programs, such as job training and the provision of time-bound subsidies for employment creation in the private sector.

The main concerns that have been raised include: (1) the absence of a self-selection mechanism induced by the presence of relatively well-paid jobs offered by direct employment programs, which make it politically difficult to eliminate positions and move workers into private sector jobs in a following period of economic growth; and (2) the absence of a self-targeting mechanism in the design of the programs caused by the requirement of presenting proof of unemployment. This is likely to leave informal workers without an instrument to mitigate the losses from unemployment.

Overall, there remain concerns about the low impact of the subsidies on the number of *new jobs generated as a result* of the program (which is distinct from the number of employment financed by the program). The possible stigmatization caused by the subsidy and the high level of monitoring that is necessary to prevent fraud and abuses are other causes of concern.

On the other hand, the Contingent Unemployment Fund created in 2001 is an attractive fiscal instrument that has been utilized to allocate additional public resources towards employment programs, contingent on an increase in the unemployment rate beyond a previously established boundary. It allows for increased flexibility in fiscal policy through the relocation of resources within previously defined budget limits, without compromising the achievement of the structural surplus rule. Likewise, it avoids committing *a priori* an excessive amount of resources to the employment programs.

Despite the employment and the economic situation recovery, the government maintained and even increased employment programs since 2004. Thus, some employment programs initially oriented as anti-crisis tools have been reoriented toward structural poverty interventions. For example, the training components of direct employment programs have been increased.

This situation moves the debate beyond the analysis of temporary measures adopted during the 1999 crisis to mitigate rising unemployment overall. In particular, it orients the discussion towards the ideal design of public employment programs in the context

of a permanent safety net policy. For example, the wage that should be paid by a fully self-targeting public program seems to be much lower than the levels paid by the programs in Chile. It, however, is politically difficult in the short-term to switch from high-salary-rationed positions to low-salary-guaranteed positions.

In summary, if a particular country wants to build a permanent public safety net that includes permanent employment programs, it could start with looking at the advantages and disadvantages of the different alternatives adopted in Chile during the 1999 crisis episode. There is plenty of accumulated experience that cannot only help to improve on the previous experience, but also imposes limits on the scope of future actions.

4.2 Factors that affected the ability to scale up social protection programs

4.2.1 Positive factors

a) The public debt reduction in the 1990s as mechanism of self-protection

Between 1989 and 1999 the gross central government debt was reduced from 47% to 14% of GDP. This continuous decline in the public debt burden allowed for maintenance of stable growth in social spending after 1999 in several ways. First, the reduction in debt implied a decrease in the amount of resources needed to service it, which had direct consequences in terms of more resources available to redirect towards social areas. This has been called the “social dividend” of the fiscal policy (Ministry of Finance, 2004). Secondly, keeping public debt low prevents foreign exchange market pressures (Mandilaras and Bird, 2008) and constitutes a mechanism of self-protection at the country level, since severe fiscal adjustments are less likely to be needed when interest rates sharply rise and capital flows behave pro-cyclically with respect to trade shocks. High debt levels in good times reduce fiscal space in times of recession (Krueger, 2013). Lowering the public debt during booms contributes to better external credit conditions during recessions (Arenas de Mesa and Guzman, 2003). For example, Chile experienced the lowest country risks of Latin American countries during the 1999 crisis

and its macroeconomic policies have been positively evaluated in international competitive rankings (e.g. World Economic Forum, 2004).

b) The Copper Stabilization Fund as a mechanism of self-insurance

The Copper Stabilization Fund (CSF) was created in 1987 to stabilize fiscal revenue fluctuations produced by changes in the price of copper. Its main purpose is to save resources when the current price is above an estimated long-term price (called the reference price) in order to use these resources when the price is lower. In addition, the government has sometimes used the accumulated resources to pay public debt. The accumulated resources are administrated by the Central Bank, which avoids any discretionary use since this institution is independent of the central government.²⁰

The CSF can be catalogued as a mechanism of self-insurance at the country level that allows transferring resources from good to bad states to mitigate the effects of adverse shocks in terms of trade. Its creation, along with the fiscal rule explained below, has allowed a more sustainable fiscal expenditure growth.

c) The structural surplus rule as a mechanism of self-insurance

Since 2001, the government incorporated not only the copper price fluctuation as a stabilization mechanism but also the fiscal revenues oscillation based on GDP growth fluctuation with respect to its long-term trend. It was introduced an estimation of structural revenues based on a long term tendency in order to define the amount of current expenditures looking to a medium term base. Thus, the structural balance

²⁰ See Arellano (2005) for a detail description of the CSF operation and rules.

reflects the amount of revenues and expenditures reached if the economy were operating to its full potential and if the copper were trading at its medium term price.²¹

This mechanism includes a self-imposed fiscal rule based on a structural surplus defined as a percent of GDP. This rule allows automatic stabilizers in the budget to operate fully while avoiding fine-tuning of the fiscal policy at any phases in the cycle. Unlike the European fiscal rules (Mundell, 2011), it has been strong enough to be enforced. It allows a countercyclical fiscal policy since expenditures follows a path determined by structural revenues. As a result, the variance in the changes of expenditures has decreased substantially since the beginning of this rule. Figure 4 shows the results of its application during 2001-2010.

According to Gill and Ilahi (2000) and Engel, Neilson, and Valdes (2011), Chile's fiscal rule can be seen as a measure of country-level self-insurance. Like a stabilization fund, it transfers resources from good to bad states. Furthermore, by pursuing long-term sustainability of fiscal policy and communicating a clear sign of fiscal discipline to the markets, the rule should operate as a mechanism of self-protection, reducing the likelihood of financial contagion from crises affecting other countries in the region.

d) The new combination of monetary, exchange rate and fiscal policy

Under a flexible nominal exchange rate system, the interest rate needs to be directed towards achieving an inflation target (Bird, 2002). Along with the implementation of the new fiscal rule, Chile moved to a new combination of monetary, exchange rate, and fiscal policy. Since 1999, the Central Bank oriented its policy to keep annual inflation in the range of 2-4%. At the same time, the exchange rate policy moved from a band

²¹ The operating system of CSF is incorporated in the fiscal rule. For a detailed description of the Structural Balance methodology and its operation rules, see Marcel *et al.* (2001).

scheme to a free currency fluctuation. That was implemented in a context of increasing integration to the financial international markets.

This new policy framework has been remarkably effective, in particular, the interest rate remained substantially low during the new negative phase of the cycle that took place in 2001-2002. This allowed monetary policy to play the stabilization role, improving the coordination among the macroeconomic policies. Thus, the fiscal policy played a countercyclical role since 2000 but, unlike the case of 1998-1999, this has not implied more pressure on the interest rate. This undoubtedly has improved the position of the Chilean macroeconomic fundamentals to absorb the effects of future disturbances.

4.2.2 *Negative factors*

- a) Absence of systematic interaction among programs and duplicity of functions and objectives

The stable progress and financing of the social protection system helped to attenuate the impact of the 1999 downturn among poor households. However it is likely that the lack of a deeper developed social protection system affected the ability to scale up programs during the 1999 shock episode.

In particular, the lack of common institutional framework and systematic interaction among the public institutions undermined the efficiency of the employment programs in terms of coverage and function duplication.

- b) Insufficient installed administrative capacity before the crisis

The insufficient administrated capacity before the crisis put considerable pressure on setting up a public apparatus to rapidly respond to urgent economic demands. In fact, in short time a new system was set up in response to the crisis. Considering the pre-crisis period, the coverage reached by the programs in a short period of time is

remarkable. However, this lack of administrated capacity stressed some public institutions (e.g. the Employment and Training Service, SENCE²²), which not only had to deal with their regular programs, but also had to implement new tasks relocating human resources, as well as achieving demanding coverage objectives (in terms of number of beneficiaries covered by the respective programs for each month).

c) Inertia in expenditures committed before the crisis

The ability to scale up social protection programs after the beginning of the crisis was affected by the rigidity and inertia of a high percentage of fiscal expenditures. A large percentage of the budget was already committed before the beginning of the crisis as a result of extensive reforms initiated before the crisis. For example, around 76% of the public expenditures included in the 2000 budget were already committed. Two of these committed instances were the judicial and the educational reforms, which were initiated in the 1990s.

5 CONCLUDING REMARKS

European countries are increasingly looking at social protection policies adopted by other countries as an alternative to parts of their costly welfare systems (Brunori and O'Reilly, 2010). The great recession and the European crisis call into question the financial viability of current programmes. Consequently, there is a need in the European Union for fiscal adjustments combined with a reform-oriented social investment strategy.

In this context, this article aims to be an introduction to the Chilean experience in coping with the 1999 crisis and how the policies adopted before and (especially) after that crisis have reconciled strong growth in social spending with a balanced fiscal policy.

²² See University of Chile, 2004.

Thus, the Chilean experience could serve as a model for exploring innovative social protection solutions for European countries, in a way to make long-term social investments and medium-term fiscal consolidation mutually supportive and sustainable.

This article argues that the adjustment policy adopted *during* the crisis can be ex-post considered inappropriate. However the fiscal discipline and the strong public institutions developed *before* and *after* the crisis strengthened Chilean social protection policies. For example, the public debt reduction during the 1990s, the Copper Stabilization Fund created in 1987, the structural GDP surplus rule, and the new combination of monetary and fiscal policies adopted after the crisis have reduced and/or mitigated the risk and hence the vulnerability of the Chilean economy to new turbulent episodes. Thanks to this, Chile was able to implement a countercyclical fiscal policy during 2000-2003 and during the last crisis (the Great Recession).

With respect to passive labor policies aimed to mitigate the effects of unemployment during crises, Chile launched a contributory unemployment insurance (UI) that combines savings and market-type risk pooling aspects. Its mix of personal accounts and redistribution reduces moral hazard problems endemic to traditional European UI schemes and keeps costs at manageable levels. This might be an attractive alternative for countries that want to reform their unemployment protection schemes combining unemployment insurance with strong incentives for the unemployed to take jobs.

The main strength of public employment programs is that if properly designed as a “work guarantee” (low wages, no rationing, and low non-labor costs, see Ravallion, 1999) they effectively serve as unemployment insurance for those who were employed (in formal or informal jobs) and for households as a whole (De Ferranti *et al.*, 2000). Chile made a substantial effort in terms of resources and administrative capacity to develop a new generation of public employment programs after the 1999 downturn. Unlike in the 1970s and 1980s, the government has diversified its intervention away from direct employment by providing other “active” labor market programs, such as job

training and the provision of time-bound subsidies for employment creation in the private sector. As a result, if a particular country wants to build a permanent public safety net that includes permanent employment programs, it could balance the advantages and disadvantages of the different alternatives adopted in Chile during the 1999 crisis episode.

It is also important to understand the private coping mechanisms that households take to minimize the effects from crises. This can help to better monitoring and assessment of the impacts of shocks at the household level. It also allows for designing policy interventions and social protection measures that can prevent negative long-term outcomes (Mukherjee and Nayyar, 2011). As a result, this article analyzes the response of wives' labor supply to husbands' job loss and the response of children's (15-18 years old) labor supply and school attendance to paternal job loss.

According to the econometric models, the evidence suggests that there is a tendency of families to cope the effects of the crisis by increasing certain underused family labor, i.e. wives' labor. The probability of labor force participation of wives increases by 5.3% if their husbands are laid off. This represents an increase of roughly 17% on the mean labor force participation of wives. These results are consistent with previous evidence for other Latin American countries. The AWE during the crisis period is found to be 30% larger as the observed during the period of economic prosperity. This suggests that households cope with the effects of husbands' unemployment by increasing wives' labor participation, especially during the crisis.

Unlike the case of wives, the probability of labor force participation of older children decreases by 1.98% if their fathers are laid off. This Discouraged Worker Effect (DWE) is somewhat attenuated during the crisis, but not to the extent needed to change the impact of this effect. Paternal unemployment does not imply a significant decrease on child school attendance. These no-effect results are consistent with what De Ferranti *et*

al. (2000) find for other Latin American countries and what Skoufias and Parker (2006) find for Mexico.

Overall, the Chilean experience during the 1999 crisis is a notable case for analysis in order to adopt social protection policies within a context of fiscal discipline and inclusive growth, which has increasingly become necessary among European countries.

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Table 1: Quarterly macroeconomic variables 1997-2000

Quarter	Real GDP Growth (12 months %)	Real Domestic Expenditure Growth (12 months %)	Consumption Growth (12 months %)	Investment Growth (12 months %)	Trade Balance (% GDP)	Current Account Balance (% GDP)	Capital Flows (1) (% GDP)	Market Real Interest Rate (2) (% annual)	Policy Real Interest Rate (% annual)	Inflation Rate (12 months %)	Unemployment Rate (%)
1997.1	4.6	1.3	4.3	4.6	-0.8	-3.2	7.0	14.4	7.4	6.9	5.5
1997.2	6.2	8.1	5.1	7.0	-1.1	-3.6	8.8	11.1	7.0	6.1	6.3
1997.3	7.4	9.7	7.7	13.9	-1.4	-3.9	9.9	11.6	6.7	5.6	6.7
1997.4	8.2	9.6	8.6	16.3	-1.7	-4.4	8.1	16.8	6.5	6.6	5.9
1998.1	6.8	12.3	8.5	11.8	-3.1	-5.9	7.8	15.6	7.9	6.2	5.2
1998.2	5.6	7.5	7.4	14.6	-3.9	-6.5	4.8	14.6	8.5	5.4	5.7
1998.3	3.2	4.4	3.3	2.0	-4.0	-6.5	2.3	23.1	9.3	5.3	6.7
1998.4	-2.3	-7.6	-1.1	-17.3	-2.6	-4.9	2.5	16.7	10.3	4.3	7.1
1999.1	-2.5	-8.5	-2.1	-19.9	-0.9	-3.4	-0.8	8.7	7.4	3.6	7.7
1999.2	-4.1	-10.1	-4.0	-25.6	0.6	-2.2	0.4	10.8	6.1	4.0	9.8
1999.3	-1.1	-6.5	-0.1	-21.1	2.2	-0.6	2.0	6.5	5.0	3.4	11.3
1999.4	4.8	2.5	4.4	-4.8	3.3	0.1	0.3	8.3	5.0	2.5	10.0
2000.1	5.5	6.2	4.5	3.6	3.6	0.4	2.9	9.4	5.2	2.8	8.2
2000.2	5.1	9.0	4.8	7.7	3.0	-0.2	3.3	11.9	5.5	3.5	8.9
2000.3	4.2	4.2	3.5	12.1	3.1	-0.5	1.4	7.7	5.3	3.8	10.5
2000.4	3.2	4.6	1.8	12.0	2.8	-1.2	1.0	11.4	5.0	4.5	9.2

Source: Central Bank and INE

(1) Capital and financial account excluding reserve assets

(2) Corresponds to the overnight inter-banking system interest rate

Table 2: Poverty Indicators 1990-2003(*)

Official poverty lines

	Number of poor people	Headcount FGT (0)	Poverty Gap FGT (1)	FGT (2)	Number of indigent people	Headcount FGT (0)	Poverty Gap FGT (1)	FGT (2)
1990	4,965,604	38.6	14.6	7.9	1,659,301	12.9	4.5	2.3
1992	4,331,701	32.6	13.1	6.7	1,169,267	8.8	2.8	1.3
1994	3,780,038	27.5	9.7	5.0	1,036,163	7.6	2.9	1.5
1996	3,288,271	23.2	7.9	3.8	813,766	5.7	2.1	1.1
1998	3,160,076	21.7	7.5	3.8	820,021	5.6	2.0	1.1
2000	3,081,052	20.6	7.1	3.7	849,169	5.7	2.1	1.2
2003	2,905,424	18.7	6.3	3.2	726,509	4.7	1.7	1.0

Source: Mideplan (2001), Mideplan (2004), Feres (2001) and author's own calculations based on microdata from CASEN 2003

(*) FGT (0)=headcount ratio; FGT (1)=poverty gap, FGT (2)=Foster, Greer and Thornbecke index with parameter 2.

(*) 2003 Indexes estimated using expansion factors based on Census 2002

Table 3: Unemployment Incidence, 15-65 years old Population 1997-2000

Unemployment Incidence, 15-65 years old Population

Unemployment Rate by Years of Education					
	0-8	9-11	12	>12	Total
1997	4.4	6.0	6.9	5.1	5.4
1998	6.2	8.4	9.6	6.1	7.3
1999	7.6	10.1	12.1	7.8	9.1
2000	5.9	8.6	12.0	9.0	8.5
1997-2000 (var)	1.4	2.6	5.1	3.9	3.1

Unemployment Rate by Age					
	15-18	19-24	25-50	>50	Total
1997	17.0	12.3	4.4	2.6	5.4
1998	19.3	16.3	6.2	3.6	7.3
1999	24.0	20.1	7.6	5.3	9.1
2000	22.1	19.5	7.0	5.2	8.5
1997-2000 (var)	5.1	7.3	2.7	2.5	3.1

Source: Cowan et al. (2005) based on ENE, INE

Table 4: Added Worker Effect on Spouses/Couples

Added Worker Effect Over the 1999 Crisis						
Dependent Variable: Labor Force Participation						
	(1)	(2)	(3)	(4)	(5)	(6)
	b	b	b	b	b	b
Husband's Induced Unemployment Status	0.0388**	0.0560**	0.0530**	0.0306	0.015	0.0171
Interaction Husband's Unemp x U Rate				0.2791	0.4176*	0.4019*
Husband's Age		-0.0078**	-0.0073**	-0.0078**	-0.0073**	-0.0072**
Husband's Age Squared		0.0001**	0.0001**	0.0001**	0.0001**	0.0001**
Husband's Years of Schooling		0.0151**	0.0132**	0.0151**	0.0132**	0.0131**
Husband's Years of Schooling Squared		-0.0009**	-0.0008**	-0.0009**	-0.0008**	-0.0008**
Age		0.0229**	0.0226**	0.0229**	0.0226**	0.0226**
Age Squared		-0.0003**	-0.0003**	-0.0003**	-0.0003**	-0.0003**
Years of Schooling		-0.0361**	-0.0373**	-0.0361**	-0.0373**	-0.0374**
Years of Schooling Squared		0.0039**	0.0039**	0.0039**	0.0039**	0.0039**
Children < 5 years old		-0.0915**	-0.0911**	-0.0914**	-0.0911**	-0.0912**
Region dummies	No	No	Yes	No	Yes	
Quarter dummies	No	No	Yes	No	Yes	
Region by Quarter dummies						Yes
N	660913	656734	656734	656734	656734	656734
r2_a	0	0.119	0.129	0.119	0.129	0.113
Test_F				117.426	115.36	117.217
Test_p				0	0	0

* p<0.05, ** p<0.01

Source: author's own calculations using repeated cross-section individual data from the 1996-2005 quarters of the *Encuesta Nacional de Empleo (ENE)*, INE. Each column is a different Linear Probability Model estimated by OLS. In all cases, the dependent variable (LF_{irt}) is a dummy variable that equals 1 if the (female) spouse i living in the region r participates in the labor force during the quarter t and 0 otherwise. The *Husband's Induced Unemployment Status* is a dummy variable that equals 1 if the (male) household head of the spouse i is "induced" to unemployment (being fired or laid off, but not job resignation) during the quarter t and 0 otherwise. *Husband's Unemp x URate* is the interaction between the *Husband's Induced Unemployment Status* and the nationwide unemployment rate in quarter t ($URate$). Column 6, the preferred specification, includes region-by-quarter dummies (interacted region and quarter dummies) to control for all time-varying unobservables at each region. The last two rows show the F statistic and the p-value of the test of joint significance of β_1 and β_2 (the coefficients of the *Husband's Induced Unemployment Status* and its interaction with $URate$).

Table 5: Added Worker Effect on Children 15-18 years old- Labor Force Participation

Added Worker Effect Over the 1999 Crisis						
	Dependent Variable: dlf					
	(1)	(2)	(3)	(4)	(5)	(6)
	b	b	b	b	b	b
Father's Induced Unemployment Status	-0.0194**	-0.0252**	-0.0198**	0.0271	-0.0369	-0.03
Interaction Father's Unemp x U Rate				-0.5736**	0.1871	0.1171
Father's Age		0	-0.0001	0	-0.0001	-0.0002
Father's Age Squared		0	0	0	0	0
Father's Years of Schooling		-0.0157**	-0.0144**	-0.0157**	-0.0144**	-0.0143**
Father's Years of Schooling Squared		0.0004**	0.0004**	0.0004**	0.0004**	0.0004**
Sex (=1 if male)		0.0636**	0.0635**	0.0636**	0.0635**	0.0633**
Age		-0.4227**	-0.4255**	-0.4228**	-0.4255**	-0.4247**
Age Squared		0.0150**	0.0151**	0.0150**	0.0151**	0.0151**
Years of Schooling		0.0004	0.0035	0.0004	0.0035	0.0039
Years of Schooling Squared		-0.0021**	-0.0023**	-0.0021**	-0.0023**	-0.0023**
Region dummies	No	No	Yes	No	Yes	
Quarter dummies	No	No	Yes	No	Yes	
Region by Quarter dummies						Yes
N	216607	214389	214389	214389	214389	214389
r2_a	0	0.139	0.147	0.139	0.147	0.133
Test_F				41.858	21.761	20.724
Test_p				0	0	0

* p<0.05, ** p<0.01

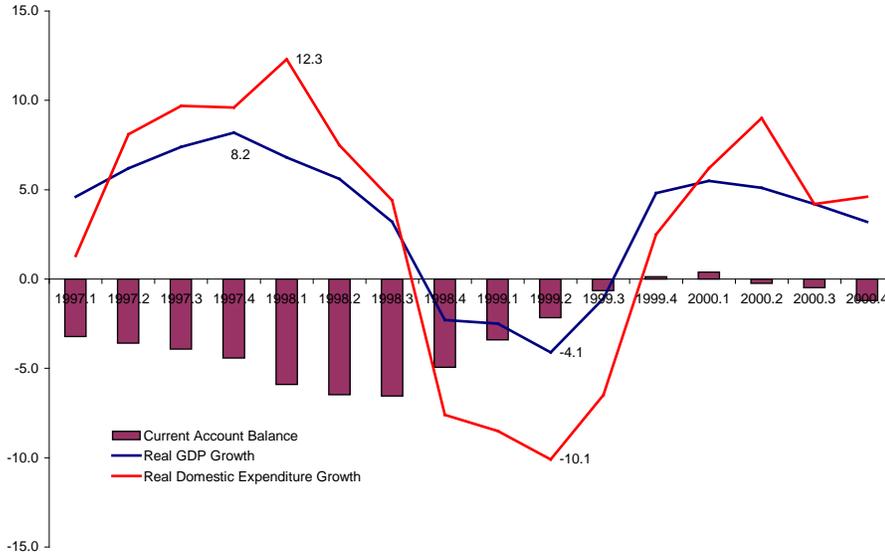
Source: author's own calculations using repeated cross-section individual data from the 1996-2005 quarters of the *Encuesta Nacional de Empleo* (ENE), INE. Each column is a different Linear Probability Model estimated by OLS. In all cases, the dependent variable (LF_{irt}) is a dummy variable that equals 1 if the male householder's child (15-18 years old) i living in the region r participates in the labor force during the quarter t and 0 otherwise. The *Father's Induced Unemployment Status* is a dummy variable that equals 1 if the father of the child i is "induced" to unemployment (being fired or laid off, but not job resignation) during the quarter t and 0 otherwise. *Father's Unemp x URate* is the interaction between the *Father's Induced Unemployment Status* and the nationwide unemployment rate in quarter t ($URate$). Column 6, the preferred specification, includes region-by-quarter dummies (interacted region and quarter dummies) to control for all time-varying unobservables at each region. The last two rows show the F statistic and the p-value of the test of joint significance of β_1 and β_2 (the coefficients of the *Father's Induced Unemployment Status* and its interaction with $URate$).

Table 6: Summary of the Main Employment Programs

Name of the Program	Proempleo-Subsecretaria	EEP-CONAF	FOSAC-Interior	PMU	Proempleo-SENCE	Reinsercion-Fosis
Type of program	Direct	Direct	Direct	Direct	Indirect	Indirect
Institution responsible	Ministry of Labor	Conaf	Undersecretary of Interior	Subdere	SENCE, Ministry of Labor	Fosis
Year of beginning	2001	2001	1999	1987	2001	2000
Executors	Private and Public Institutions	Conaf	Private and Public Institutions	Municipalities	Private employers	Private and Public Institutions
Beneficiaries	unemployed household head	unemployed household head	unemployed household head in poverty condition	unemployed household head in poverty condition	unemployed	unemployed household head in poverty condition
Elegibility Criteria and targeting system	Self declaration of being a household head and unemployment, registered OMILs	Self declaration of being a household head and unemployment, registered OMILs	Self declaration of being a household head and unemployment, registered OMILs	Self declaration of being a household head and unemployment, registered OMILs	Self declaration of being a household head and unemployment, registered OMILs	Self declaration of being a household head and unemployment, registered OMILs

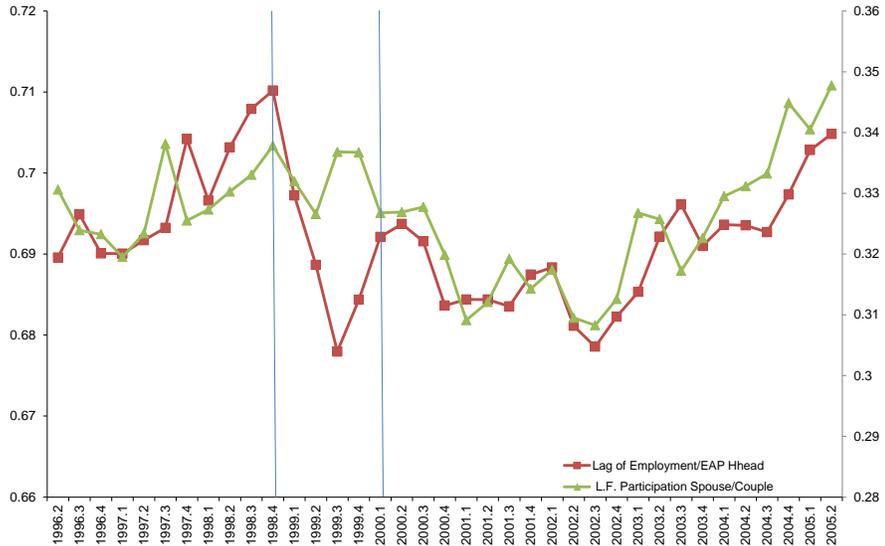
Source: University of Chile (2005)

Figure 1: Current account balance, GDP and domestic expenditure 1997-2000



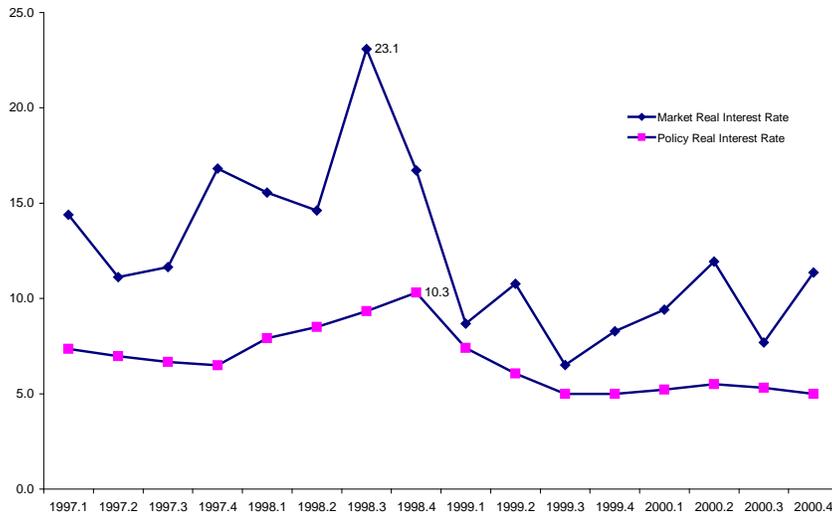
Source: Central Bank of Chile

Figure 2: Labor force and employment participation of household heads and spouses/couples



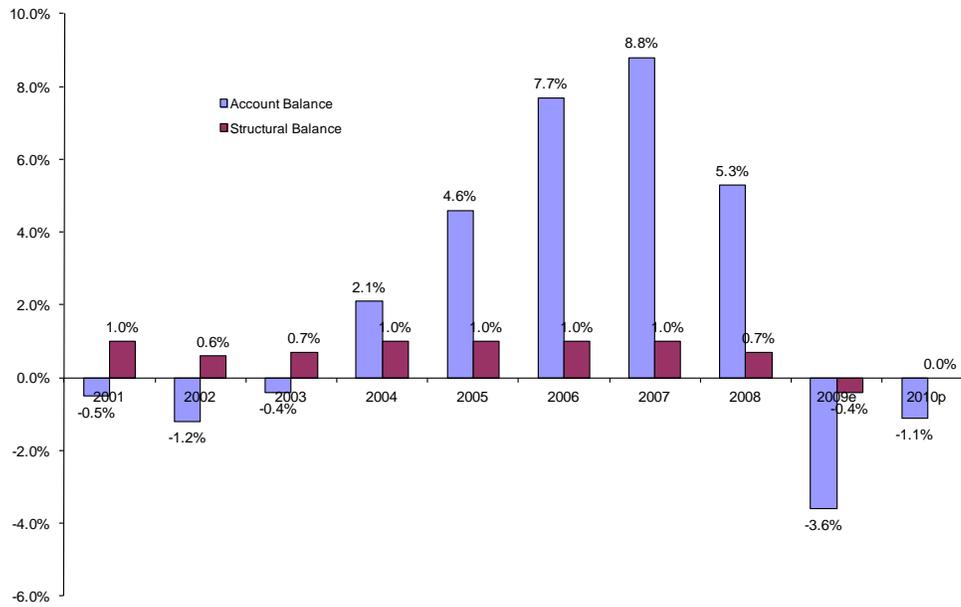
Source: author's own calculations using aggregate data from ENE, INE. The lag of employment participation of household heads is the ratio between the employment and the working age population of household heads (principal axe). The labor force participation of spouse/couple is the labor force participation of married and unmarried couples of household heads (secondary axe). The time series are detrended and deseasonalized using a linear time trend and indicator variables for each quarter.

Figure 3: Market interest rate and policy interest rate 1997-2000



Source: Central Bank of Chile

Figure 4: Account (or Regular) Fiscal Balance and Structural Fiscal Balance 2001-2010



7

SOURCE:

DIPRES,

2010

APPENDIX

This Appendix explains the identification strategy and the main assumptions behind the estimation of the Added Worker Effect (AWE) presented in Section 3. It also presents informal specification tests that support the strategy.

Measuring the effect of husbands' unemployment on wives' labor force participation is not an easy task. As mentioned in the paper, this association could arise from other factors related to both variables. First, the unemployment of the husband might proxy for predominantly "transitory" factors that are unrelated to the personal characteristics of the household (Maloney, 1991), such as local labor market conditions that affect both the husband's unemployment status and the reservation wage of his wife. Changes in the minimum wage or the increase on employment programs during the crisis may be good examples of this omitted variable problem.

Second, the unemployment of the husband might proxy for predominantly "permanent" characteristics of the household (Lundberg, 1985). For example, the sorting mechanism that initially formed the household might match spouses with similar level of human capital, which is not fully captured by traditional proxies (Maloney, 1991). Also, there may be a high correlation between unobserved tastes for leisure among wives and husbands in the same household. If there is a positive correlation and the husbands with a higher taste for leisure also have a higher probability of becoming unemployed, then this will bias against detecting the AWE (Fernandes and Felicio, 2005). Furthermore, the husband's decision to resign from a job, unlike an unexpected job loss, could be endogenous to the wife's decision to participate in the labor force.

To avoid the first source of bias, the models in Section 3 include the region-by-quarter dummies (θ_{rt}):

$$LF_{irt} = \beta_0 + \beta_1 UNEMP_{irt}^H + \beta_2 UNEMP_{irt}^H * URATE_t + Controls_{irt} + \theta_{rt} + \varepsilon_{irt} \quad (A.1)$$

This enables us to exploit the within region-by-quarter variation coming from repeated observations within these cells. The implicit assumption under which this approach is valid is that the only unobservable determinants of LF_{irt} that influence $UNEMP_{irt}^H$ are region-by-quarter specific, varying only between regions and quarters. Thus, all “transitory” factors and unobserved local labor market conditions, such as changes in the minimum wage or the increase of employment programs, are absorbed by θ_{rt} .

To mitigate the second source of bias, the models estimate the effect of husbands’ “induced” unemployment on LF_{irt} , but not job resignation. The “induced” unemployment is defined as the unemployment caused by an involuntary termination from previous job (being fired or laid off).²³ This source of unemployment is assumed to be more exogenously determined compared with overall unemployment, once we control for demographic characteristics of households, such as age, years of schooling, and number of children.²⁴ Thus, $UNEMP_{irt}^H$ is assumed to be uncorrelated with ε_{irt} , once we control for demographic characteristics of the households.

Table A.1 presents an “informal” specification test to support this assumption. A bivariate probit model is specified to jointly estimate the labor force participation of wives and husbands’ unemployment status. In this model, the unemployment status indicator acts as one of the binary dependent variables and also as an endogenous explanatory variable of the labor force participation equation. The coefficients from two versions of this model are estimated using the full maximum likelihood approach (ML).

²³ Unemployment of this type is essentially in disequilibrium, because it is largely determined by employer layoff decisions (Maloney, 1987). Thus, this type of unemployment is assumed to be largely an involuntary behavior.

²⁴ For example, Stephens (2002) stresses the use of involuntary job loss as an exogenous employment shock and argues that estimates of AWE that treat all of the unemployed the same will likely underestimate the magnitude of the true effect.

The first version uses all type of unemployment in coding a husband as unemployed. The second version only uses the “induced” type of unemployment to code a husband as unemployed.

The first also shows a positive and significant correlation between the unobservables of the *LF* equation and the unobservables of the *UNEMP* equation ($\rho = 0.295$ and $\rho_{se} = 0.057$). The second version finds no significant correlation between the unobservables of both equations ($\rho = 0.088$ and $\rho_{se} = 0.059$). This evidence is consistent with the assumption that the “induced” unemployment is more exogenously determined compared with all type of unemployment, once we control for household demographic characteristics.

The conclusion is the same when the bivariate probit models are estimated for children between 15 and 18 years old instead of spouses/couples (results not shown). There is a positive and significant correlation between the unobservables when using all type of unemployment ($\rho = 0.11$ and $\rho_{se} = 0.04$) and no significant correlation when using the “induced” type of unemployment ($\rho = 0.025$ and $\rho_{se} = 0.053$).

Table A.1: Added Worker Effect of Spouses/Couples- Specification Tests

Bivariate Probit Regressions	(1)		(2)	
	b	b	b	b
Variable	LF Participation	Husband's Unemployment Status (All Type)	LF Participation	Husband's Unemployment Status (Induced)
Husband's Unemployment Status	-0.6394**		-0.1743	
Interaction Husband's Unemp x U Rate	1.7432**		1.4950*	
Husband's Age	-0.0281**	-0.0237**	-0.0272**	-0.0224**
Husband's Age Squared	0.0003**	0.0002**	0.0003**	0.0002**
Husband's Years of Schooling	0.0449**	0.0183**	0.0450**	0.0235**
Husband's Years of Schooling Squared	-0.0026**	-0.0019**	-0.0026**	-0.0018**
Age	0.0775**	0.0014	0.0782**	0.001
Age Squared	-0.0009**	0	-0.0009**	0
Years of Schooling	-0.0968**	0.0035	-0.0972**	0.0077*
Years of Schooling Squared	0.0107**	-0.0007**	0.0108**	-0.0008**
Children < 5 years old	-0.2881**	-0.0071	-0.2902**	-0.0190*
Interacted Region and Quarter Dummies	Yes		Yes	
N	656734		656734	
ll	-477529.005		-446462.355	
rho	0.295		0.088	
rho_se	0.057		0.059	

* p<0.05, ** p<0.01

Source: author's own calculations using repeated cross-section individual data from the 1996-2005 quarters of the *Encuesta Nacional de Empleo* (ENE), INE. The table presents two bivariate probit models estimated by using the full maximum likelihood approach (ML). Each model jointly estimates the labor force participation of wives and the husbands' unemployment status. The unemployment status indicator acts as one of the binary dependent variables and also as an endogenous explanatory variable of the labor force participation equation. The first models uses all type of unemployment to code a husband as unemployed. The second version only uses the "induced" type of unemployment to code a husband as unemployed.