

## CISLA ADDENDUM

**Honors Thesis:** Foreign Direct Investment and Total Factor Productivity in the Mining Sector: the case of Chile

The CISLA experience provided an incredible opportunity to students to expand their scope of knowledge while exploring an area of their interest. At the same time, it taught us how to be critical when analyzing a particular issue. For my honors thesis, I am investigating the impact of Foreign Direct Investment (FDI) on the Total Factor Productivity (TFP) in the mining sector in Chile. The underlying theme of the study is the success of the Chilean economic model. The success of the transformation of the Chilean economy during the Pinochet regime was seen as an 'economic miracle' by many economists simply because it is one of the very few instances where the neo-liberal model actually generated substantial and consistent growth. As a CISLA scholar, however, I ought to examine this success critically.

The neo-liberal model of growth variously applied throughout the world is the most widespread economic model mainly because it engenders economic results that are substantial and tangible. Yet, there is no pre-conceived formula and every country has its own set of conditions that need to be accommodated. In the 1990s, Latin

American countries started to liberalize foreign trade and investment supposed to fuel growth and development. In Chile, the country had just returned to democracy after almost twenty years of dictatorship under General Augusto Pinochet. The openness of the economy by Pinochet has been said to be beneficial to Chile. However, research on the macroeconomic effect of foreign direct investment (FDI) on growth has remained inconclusive thus far. Part of reason is that scholars usually focus on FDI at the aggregate level without considering the differences across sectors. Indeed the sectorial FDI structure in [Latin America] displays differences and the intensity of FDI (stock of FDI per employed) varies widely across sectors and over time. FDI effects operate in three ways: a direct productivity within the host company, a horizontal productivity effect within the sector through pro-competitive effects and technological spillovers through backward and forward linkages. Technology in turn is believed to be a key factor in a country/sector growth. Therefore the purpose of my Honors Thesis is to investigate the negative and positive impact of capital flows on technology hence productivity.

The idea of the TFP is based on the endogenous growth model summed up in a production function by which output is a function of capital, labor and productivity.

$$Y = A F(L, K).$$

where  $Y$  is income  $K$  is capital input and  $L$  is labor input.  $A$  is productivity and note that an increase in  $A$  will also increase  $Y$ , the total output, without an increase in any other input ( $K$  and  $L$ ). The model can be rewritten in the Cobb-Douglas Function:

$$Y_t = A K_t^\alpha L_t^{1-\alpha}, 0 < \alpha < 1$$

where  $\alpha$  represents the shares of the inputs in output. According to the model the only way for a country to consistently grow is through an increase in productivity,  $A$ . Therefore a key concern for policymakers is to understand how to increase the TFP.

After going through difficult times and after the passage of Salvador Allende as a socialist president, the development of Chile really came about during the dictatorship of Augusto Pinochet from 1973-1991. On the one hand, Pinochet established the foundations of the capitalist Chile of today. He privatized the main economic activities such as electricity, energy and more importantly, copper. He drastically opened the Chilean market to foreign investment and actively promoted an export-led development model. Economic openness in almost all developing countries is usually detrimental. Surprisingly, it worked in Chile enabling the country to gain competitive advantage in copper mining. Building on the infrastructure - technological and of human capital - that had been promoted since the 1960s, Chile had managed to spur economic growth immediately after it was reconnected to the world market in the late 1970s. Today the Chileans enjoy higher standards of living, a stable economy, and a better education system with a higher level of productivity than before the dictatorship.

However, although the dictatorship laid the ground for a successful economic growth, it was a period of great brutality and violence that destroyed many lives.

Therefore the economic success of the country should be understood under the context of a brutal and tumultuous past. The mining sector in Chile for instance, went through a dramatic transformation. From being state-run to being privately controlled, the rent from the mining activities progressively went from being used in social welfare to being expropriated by private companies. In other words the dynamic of the contemporary Chilean economy is the results of an exploitative past.

The CISLA experience gave us the tool to examine such development in a critical fashion. Among other things, the development of Chile is directly correlated with the abuse of its environment. The country has managed to exploit its environment in a way that enabled it to gain competitive advantage in copper mining, fisheries, and agro-industrial businesses. However, although most of the world economists see this achievement as an 'economic miracle', it is imperative to consider the negative and positive effects of this transformation.

In order to be an emerging economy, Chile needed to extensively exploit its soil, destroyed some of its woods to uncover copper mines, and overused its fisheries. Is that really what development is? Even though Chile appears to have gotten out of the poverty trap, it is not certain that its future generation will inherit a sustainable environment. Chile has improved through industrialization. The liberal economy that it advocates and which I first thought to be a good system compels the country to constantly transform its habitat to keep up with the international demand of its goods. Such exploitation of the environment is the result of the rapid human evolution and the

pervasive nature of the global economy. On the one hand, we as human beings tend to believe that we have supreme power over the environment, since we can transform it in any way we want. On the other hand though, as resources of the planet are increasingly becoming scarce, we will soon be at the mercy of this destroyed environment. In the case of Chile, it is therefore necessary to investigate how possible it is to sustain economic growth without jeopardizing its environment and the living conditions of the future generations. This is a very important issue to consider because the main economic resource of Chile is copper which is depleting.

In addition, implementing a capitalist system always generates winners and losers. Capitalism is the economic system par excellence which creates the most socio-economic inequalities. It is no surprise that the lowest fraction of the economic spectrum of the Chileans is left out of the Chile 'economic miracle'. Chile still has a high rate of poverty (15%) and although decreasing, this rate is an illustration that the economic growth does not translate into improvement in standards of living for all.

The material challenge of modernity as it pertains to Chile is to provide a fairer distribution of wealth. Through several government institutions such as CORFO - where I did my internship - the government tries to alleviate poverty by providing grants for the promotion of entrepreneurship. The spiritual and ethical challenges of the Chilean model reside in finding the proper balance between economic growth and preservation of the environment alongside a revisiting of the notion of development.

My honors thesis examines the effect of FDI on the productivity of the mining sector in Chile. What is the impact of the openness of the economy on sectors such as mining? The openness of the economy to the international market entails a more extensive exploitation of the environment to provide the necessary marketable goods. Moreover, the implementation of a market economy and a capitalist system favors the development of the upper class of society while neglecting the lowest faction. The development of Chile should also be considered under the context of a very brutal past that is the dictatorship. The question that arises then is: Was it worth it? An understanding of the Chilean past should help contextualizing the economic success the Chileans enjoy today and lead to the conclusion that the Chilean economy is not headed toward a sustainable future. In this case it is imperative to come up with a viable alternative to the current model of development.