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FISCAL TRANSFERS, REGIONAL LABOUR
MARKETS AND ECONOMIC CONVERGENCE.

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Fiscal transfers, regional labour markets and economic convergence[*]

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Abstract

This paper examines the relationship between federal transfers and the existence of a wage premium for the public sector relative to the private sector in Argentina. Using theoretical insights from two related literatures, we provide a simple conceptual framework aimed at specifying the basic relations and to motivate the econometric model. Our results suggest that the public sector pays a wage premium relative to the wages paid by the private sector. This premium is increasing in the level of per capita federal transfers. We also find no significant evidence suggesting that federal transfers have an effect on wages in the private manufacturing sector at the aggregate level. However, there is some evidence as to a significant positive relationship between federal transfers and wages paid to workers with less formal education; for jobs requiring a technical or professional qualification the relationship between wages and federal transfers is negative and significant. These results broadly support our hypothesis that the private sector faces harder competition in the labour market in provinces which receive larger transfers from the central government.

Keywords: Inter-governmental transfers; Labour markets; Wage premium; Regional convergence
JEL Codes: H77; J31; J45; R11

Abstract

Este trabajo investiga la relación entre el monto de las transferencias federales a los gobiernos subnacionales y la existencia de una diferencia salarial en el sector público en Argentina. Los resultados sugieren que existe una prima salarial a favor del sector público. A su vez, esta prima está relacionada en forma positiva con el monto de transferencias federales per capita. No existe evidencia de un efecto significativo de las transferencias federales sobre los salarios del sector manufacturero provincial a nivel agregado. Sin embargo, existe evidencia de una relación positiva significativa entre las transferencias federales y los salarios recibidos por empleados con menores niveles de educación formal; esta relación es negativa en el caso de empleos que requieren una calificación técnica y/o profesional. Estos resultados avalan nuestra hipótesis de que el sector privado enfrenta una fuerte competencia por recursos laborales en aquellas provincias que reciben una mayor cantidad de transferencias federales per capita.

Keywords: Transferencias intergubernamentales; Mercados de trabajo; Prima salarial; Convergencia regional
JEL Codes: H77; J31; J45; R11

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1   Introduction

Despite the long-standing presence of a system of fiscal transfers aimed at ensuring redistribution among provinces with strong egalitarian aims, there are no signs that the convergence gap between poor and rich provinces in Argentina is narrowing. Our efforts in the past have been directed to find an explanation for this phenomenon and constitute the primary goal of our research.

In a previous paper, it was argued that it was precisely the existence of a system of fiscal transfers with the specifics of the Argentine case that was to blame for several negative effects.

In an earlier empirical investigation, Capello and Figueras (2007) and Capello et al. (2008) argued that there is evidence that suggests a non-benevolent behaviour in the application of federal transfers by provincial governments. More specifically, the authors show that transfers are primarily used for hiring staff contradicting the literature on benevolent governments which predicts a reduction of the legal tax burden in the administrations receiving the federal funds. In any case, there would seem to exist a reduction on the *de facto* effective tax burden possibly due to the existence of lowered incentives to collect local taxes efficiently.

One likely explanation for the observed lack of convergence is that provinces with large transfers fall short of meeting high levels of industrial production. In fact, Capello and Figueras (2007) and Capello et al. (2008) found that from 1991 to 1998 the Argentine provinces that received the largest transfers per capita were among the worst performers when considering the production of industrial manufactures. The authors suggest that this situation may be ultimately due to a Dutch-disease type of phenomenon arising among Argentine provinces. The authors argue that this phenomenon is rooted in the system of federal transfers and is further aggravated by the way these funds are allocated by sub-national governments.

In this way, the system of inter-governmental transfers provides greater spending capacity to the subsidized provinces although indirectly discouraging production in the manufacturing sector via distorted incentives created in the labour market. The persistence of this situation has significant negative effects on regional growth and further delays convergence between rich and poor provinces.

In this paper, we focus on the provincial labour market and on the study of the effects of the transfer system on the conditions of the labour market.

2   Some considerations on regional economies

Several previous papers [Figueras (1992), Figueras (2008), Figueras et al. (2009)] have stressed that regional economies face a significant external constraint which represents a major obstacle for reducing unemployment. Although it is difficult to estimate this effect empirically since it is not possible to measure the geographic GDP using the expenditures method, the intuition behind it will become evident.

This regional external constraint stems from structural factors, chief among which is the lack of regional competitiveness (similar structural factors are also behind the national external constraint). The low levels of competitiveness are related with several characteristics:

- low rate of investment of physical capital

- poor quality of human capital

- low degree of economic openness

- the existence of an oversized public sector

- resource flight (capital, labour)

There were several attempts aimed at overcoming this situation of structural backwardness from both the national and the sub-national governments. These efforts were largely based on fiscal policy measures along with an increase in the number of public officials; as a consequence, sub-national deficits rose and the national government has been bailing out the provinces ever since[1].

The persistence of these policies not only affected sub-national budgets but also produced several distortions in regional labour markets. In line with our discussion above, it is expected that regions tend to converge in income [Hirschman (1958)]. The main argument behind this idea is the existence of a wage premium between the regions and the consequences on resource mobility and regional growth. Specific to the Argentine situation, this can be seen clearly when comparing average wages in Jujuy or Catamarca with those in Buenos Aires.

In our analysis, we introduce the distinction between two different types of markets, Lewis-like markets and Baumol-like markets. In a Lewis-like market, labour supply is infinitely elastic. Higher demand for labour does not affect (nominal) wages thereby allowing for the existence of quasi-rents of abundant labour and long-run growth [Lewis (1959)]. In a Baumol-like market, on the other hand, labour supply is infinitely inelastic yielding a vertical curve. In this situation, a higher demand for labour translates into higher (nominal) wages [Baumol (1967)]. The problem arises when,due to institutional factors such as the presence of unions and regulations, Lewis-type markets behave as Baumol-type markets (see Llach (1988) for details).

In trying to give an answer to our main research question, we find it useful to provide a simple conceptual framework. The price, P, is simply the sum of several components, wages, W, inputs, MP, profits, B, transport costs, CT and taxes, CF. We also assume that:

- By and large, demand is spatially located in the port city of Buenos Aires (or it is shipped there)

- Firms require the same level of profits regardless of their location

In this case, we denote:

$$P = W + MP + B + CT + CF \qquad (1)$$

and we can rearrange terms to obtain:

$$B = P - (W + NP + CT + CF) \qquad (2)$$

It is evident that for profit levels to be identical, the difference in transport costs for firms located in different regions must be compensated by a difference in some other component, usually wages (or maybe taxes if there are differential tax schemes for less favoured regions). If this compensation is absent or insufficient, activity will be concentrated around the demand hub (in the rich coastal region).

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[1]In this paper, we do not elaborate on related issue, namely the political economy problem that arises from the financial dependence on the national government and the likely political constraints borne by the sub-national governments.

The existence of nationwide Baumol-type labour market is only sustainable for the region receiving all the surplus (identified by Samir Amin as the center) via relative prices (or internal terms of trade) but not for the region giving up the surplus.

In terms of this two-region approach, Figueras (1991) and Díaz Cafferata and Figueras (1999) have distinguished two different territorial regions in the context of the Argentine republic: the industrial coastal strip, or *franja industrial del litoral* (FIL) covering from La Plata to Rosario and the interior regions known as *economías regionales del interior* (ERI).

Since most provinces belonging to the ERI specialize in the production of agricultural goods which are transported to the ports of the coastal region, as a consequence of the process described above unemployment rates went up in the ERI, including the most resource-rich areas. Increasing unemployment was followed by active fiscal policies to alleviate the rising social pressures; an important part of these fiscal policies was targeted to increase public employment in the ERI (see Porto (1989)). These policies had a detrimental effect on relative regional prices which inflicted further damage on the production possibilities.

On one hand, the evidence confirms that the wages in the ERI are lower than wages in the FIL ($W_{ERI} < W_{FIL}$) although the wage premium is not large enough to compensate for the additional costs faced by provinces in the ERI region in addition to the significant increase in the number of public employment. On the other hand, we observe that income per capita in the ERI region is lower than income per capita in the FIL region ($Y_{ERI} < Y_{FIL}$). Moreover, it has also been documented that the growth in public employment in terms of the economically active population (EAP) is higher in the ERI. (see Porto (1989)).

From our discussion above, it can be argued that the existence of the Baumol-type labour market prevented the occurrence of a wage premium large enough to compensate the cost differences between regions. It is therefore important to stress that, in the Argentine case, the absence of a (large enough) wage premium was due to:

- The existence of an integrated labour market at the national scale where the benchmark consisted of the wages of public employees at the national level –this wage is not related to the marginal productivity of labour [Figueras (1992)]

- The creation of labour demand with negative marginal productivity, where the reserve price of labour is above the price that would be consistent with the state of industrial development in the region.

Since instead of the wage premium wages were set according to institutional factors, investment opportunities in the ERI regions were less attractive discouraging potential investors from mobilizing capital to the periphery and therefore laying further obstacles in the road to convergence.

Figueras (1991) develops a simple microeconomic framework to study the spatial effects of industry concentration arising from identical wages in regions with productivity differentials. There is also empirical evidence supporting this hypothesis for the United States [Kaufman and Foran (1971)].

The economic crisis that many Argentine provinces suffered through the 90's was partly the result of the decision of the national government to put on indefinite hold the *fondos compensatorios* (inter-jurisdictional transfers) that were regularly used for bailing out sub-national governments[2]. This produced a severe contraction in aggregate demand in many provinces that added to the crisis in some regional products resulting in a sharp rise in unemployment levels[3].

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[2]There were exceptions to this, the province of La Rioja being the most notable
[3]This situation originated despite the provinces being able to finance their deficits through credits from private

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3 The Regional Labour Market

Although there has been a chronic excess labour supply in the provinces, it does not seem to have resulted in a lower differential wage and a higher differential accumulation as theoretically expected. If that had been the case, then that would have stimulated higher investment with a higher differential growth that would have helped closing the gap in income per capita between the FIL and the ERI regions.

We argue that this process did not take place due to several institutional features of labour markets:

- **Migration alleviating regional markets**. Migration took place from the periphery (ERI) to the center (FIL) thus alleviating the pressures on regional labour markets blocking the operation of the Lewis-type mechanism. In the FIL, in turn, owing to the presence of an integrated (Baumol-type) labour market, there remained supply deficiencies and this helped foster unionisation.

- **The existence of a growing demand for labour for regional public administrations**. The increased transfers to the sub-national administrations were at the center of this situation resulting in higher demand for labour. The result was relatively high wages (higher than productivity wages) and high reserve wages (higher than those that would exist without the federal transfers) in the provinces.

- **The gradual integration of regional labour markets into a single nationwide labour market**. These circumstances had the effect of raising wages in the periphery to levels similar to that of the center despite the latter having a higher productivity per capita. This is the reason why wages historically deviate from the marginal productivity condition and are instead determined attending to sociological reasons. Pressures from labour unions is such that labour markets end up being integrated (this is specially so when public employment increases and wages are set with reference to the public wages at the national level). This is why we argue that wages are established institutionally. In this way, the country as a whole is seen as a Baumol-type market where sectoral and spatial segmentation featuring in a Lewis-type market are absent. This structural characteristic of labour markets prevents convergence from taking place since it does not stimulate higher capital accumulation in the ERI. Following Kaldor, this is a situation known as (relative) wage efficiency which we could naturally generalize to the case of other factors also defined similarly to $W_{ERI} < W_{FIL}$. Given that productivity is known to be lower in the ERI, this situation inevitable leads to higher economic growth in the FIL [Figueras and Ponce (1998), Figueras (2008), Richardson (1977)]

Earlier work[Capello and Ponce (1997)] points out the notion that those provinces that receive larger federal transfers per capita have a higher share of public officials as a fraction of the population. Similarly, the authors note that the larger the federal transfers the larger the per capita spending on public payroll. We can argue that, in some cases, the jurisdictions that receive large transfers per capita use the funds to increase both the amount of factors and the retribution to the factors in line with the pay scales of richer provinces. In this sense, there are reasons to believe that the system of federal transfers currently in place in Argentina has

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banks with the provincial banks acting as intermediaries (echoing the mechanism used to finance the growing national public deficits during the 80's that ended in unsustainable levels of external debt). However, there were certain limitations to this procedure since provincial banks were not able to finance regional governments beyond the legal debt-equity ratio established by the BCRA. Ultimately, this mechanism was only useful in delaying the crisis and the increase in unemployment that followed the contraction in demand eventually took place

caused several distortions in the allocation of resources in the provinces. This is all the more likely since despite the significant transfers to the poorest provinces, these have not been able to increase investment and balance their budgets but have rather inflated their public sector by hiring additional workers, increasing public wages or a combination of both.

4 Empirical methodology

Our previous research in this area covers a number of related aspects to the present investigation from both a theoretical perspective [Figueras (1992), Figueras (2008), Figueras and Ponce (1998), Figueras et al. (2009)] and an empirical investigation [Capello and Ponce (1997)]. Specifically, some of the aspects related with the mechanism of the labour market are studied in Figueras and Ponce (1998) and the positive relationship between federal transfers and per capita public spending is examined in Capello and Ponce (1997).

In this paper we together those two areas: the relation between transfers and public spending and the wage problem. The purpose in this paper is to examine the hypothesis that the existence of a system of federal transfers is related with the labour market phenomenon we have described earlier. More specifically, we will address two central aspects: (a) given the existence of a wage premium in the public sector[4] relative to the private sector, we will examine whether this premium is positively related with the share of federal transfers received by the provinces and (b) whether higher federal transfers have a positive effect on wages in the private sector. If as a result of our empirical investigation, we find a positive answer to these two questions, then we will find some empirical support for our main hypothesis of the detrimental effect of federal transfers on the private sector through an increase in both the the number and the average pay of public employees.

We have been working on topics related with regional economies, unemployment problems and growth during many years and it is often that we have been explicit about our ideas and thoughts and that of other scholars studying these issues. One such author is Alejandro Rofman whose view on the regional problem is as follows: "*(...) regional labour markets have produced growing interest (...) Firstly, this is because the alarming increase in unemployment (...) Secondly, as a result (...), we observe several significant differences in the behaviour of labour markets depending on the regions analysed. One feature (...) in the regional sphere (...) is such that data (...) would exhibit opposite motives, in accordance with characteristics of each labour market" "(...) The diverse causes that affect (...) the corresponding labour markets suggest the need for a deep knowledge of such labour market dynamics. Devising and implementing strategies (...) may be created if the distinctive characteristics identifying the occupational behaviour of the different districts*" (see Rofman (2001))

Rofman (2001) addresses two important phenomena in his work. The first problem relates with the untimely generalisation of the results for the various agglomerates to their area of influence. This is a problem we cannot help but fall prey to since we were not able to get reliable unemployment data for rural areas. The second phenomenon is related with the incidence of "various mechanisms available to sub-national governments in order to alleviate the shortages of labour demand" (Rofman (2001)). The author is referring to the "Planes Nacionales de Apoyo al Empleo Temporal" in existence throughout the 90's and this point serves to illustrate one of our main concerns: the way in which the working of regional labour markets is gravely affected by the existence of public employment. In his study, Rofman is concerned with the type of temporary public employment. In our study, we are concerned with the type of public

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[4]We use a broad definition of the public sector including not only workers in the public administration but also those who claim to work in the public sector as registered in the EPH

employment in which wages are higher than productivity. In our opinion, this is equivalent to a form of *veiled unemployment* and has several detrimental consequences on the demand for labour of other sectors and the prospects of high regional growth without which economic convergence is not possible.

4.1 Does the Public Sector pay a wage Premium?

Table 1 shows public and private average wages between 1996 and 2002 for 29 urban areas where the Statistics and Census National Institute (INDEC) carry out a Household Survey (Encuesta Permanente de Hogares, EPH). Until the first semester of 2002, the EPH was surveyed twice a year, May and October, since then, the EPHs methodology was subject to major changes that make difficult to extend our period of analysis.

The first clear outcome that emerges from table 1 is that the average hourly wage in the public sector is considerably higher than in the private sector as a whole, from 32% in the Conurbano (the surrounding areas around the city of Buenos Aires), to 111% in the case of Santiago del Estero, capital of the province of the same name, and one of the poorest provinces in Argentina.

If the private sector is dividend among different subsectors, primary, manufactures and other sectors, the results do not vary much, only in three cases (Neuquen, Buenos Aires, and Rio Gallegos) the average wage in the public sector is lower than in the primary sectors, for all other cities and sectors, the average wage rate paid by the public sector is higher. When comparing with the manufacturing sector, the one we may assume is more likely to relocate between regions in responses to differences in costs, the excess in the average wage paid by the public sector goes from 23% in Bahia Blanca to a 121% in Posadas, city which is also among the poorest in the country.

Of course, the fact that we find the average wage rate in the public sector is higher than the wage rate paid by the private sector does not necessarily mean the public sector is paying a wage premium, these differences could be originated in the fact that public employees have different characteristics to those of people working in the private sector. Table 2 reports the mean values for different characteristics of workers employed in the public and private sector. The main differences that may contribute to explain the higher wages paid in the public sector are age, and job tenure, which both are higher in the case of people working in the public sector. Also, other characteristics with the same effect are the proportion of people with higher formal education as well as being employed for jobs that require a higher qualification, which also are higher in the case of the public sector.

To go deeper into the question if higher wages in the public sector are solely explained by differences in the characteristics of people employed in the public sector vis a vis those who are employed in the private sector, or if there is indeed a positive wage premium paid by the public sector, we estimate a Mincer-type wage equation where the wage rate paid to a person is a function of her personal characteristics, as well as other variables, one of which is a dummy variable controlling for the worker being employed or not in the public sector. Through the interaction of this dummy variable with other variables, such as formal education and the qualifications required by the job a person is employed for, we allow the wage premium the vary across people with different characteristics. We estimate this wage equation for each year in the period 1996-2002. More specifically, the equation we estimate is the following:

$$\ln(w_i) = \alpha_i AGE_i + \alpha_2 (AGE_i)^2 + \gamma_i MALE_i + \sum_{j=2}^{5} \omega_j TENURE_{i,j} +$$

$$\sum_{h=2}^{3} \psi_h EDUC_{h,j} + \lambda PUB_i + \textbf{B'X} + u_i \qquad (3)$$

where:

- w_i is the hourly wage rate of worker i

- AGE is the age of worker i, in years

- MALE is a dummy variable equal to 1 if worker i is male

- TENURE is a dummy variable to control for the worker tenure, the tenure periods, in years, are: (1,2], (2,5], (5,10], (10, ...). The reference group is less or equal than 1 year

- EDUC denote dummy variables to control for the level of formal education of worker i; the education groups are: complete high school or incomplete tertiary/university (h=2), and complete tertiary/university (h=3). The reference group (h=1) is incomplete high school or less

- PUB is a dummy variable equal to 1 if worker i is employed in the public sector

- X is a set of dummy variables to control for place of residence, sector activity, and if the EPH was surveyed in October

We also run equation 3 allowing for the interactions of the PUB dummy with the three education dummies.

Additionally, we estimate a second version of the wage equation, but instead of using formal education to distinguish between workers with different skills, we use four dummy variables which control for the skills required by the job person i is employed in. In this case the wage equation is as follow:

$$\ln(w_i) = \alpha_i AGE_i + \alpha_2 (AGE_i)^2 + \gamma_i MALE_i + \sum_{j=2}^{5} \omega_j TENURE_{i,j} +$$

$$\sum_{h=2}^{4} \psi_h QUAL_{h,j} + \lambda PUB_i + \textbf{B'X} + u_i \qquad (4)$$

where $QUAL$ is a set of dummy variables to control for the skill requirements of the job worker i is employed in. The dummies are: the job requires an operative qualification (h=2); a technical qualification (h=3); or a professional qualification (h=4). The reference group is the job requires no qualification (h=1).

As with equation 3, we run equation 4 allowing for the interactions of the PUB dummy with the skill requirement dummies. The results of equation 3 and 4 are summarized in table 3.

The upper bock of table 3 reports the estimated wage premium when using equation 3. As the results shows, after controlling for all other variables, there still exists a positive and

statistically significant wage premium of 7%-10% in favour of public employees. However, this wage premium is much lower than the one obtained when we just simply compare average wages of public and private employees. When we allow for the wage premium to vary across workers, depending on the level of formal education, the results shows that the public sector wage premium is higher for workers with an intermediate level of education. However, for the other two groups (incomplete high school or less, and complete tertiary/university), the wage premium is still positive and significant.

In the lower block of table 3, we present the results when the wage equation is estimated using equation 4. Here again, we obtain that overall, there is a positive wage premium favouring public employees. If allowing for the wage premium to vary according to the skill requirements of the job, we find out that this premium is higher for jobs requiring a low qualification (no qualification and an operative qualification). For jobs requiring a technical qualification the wage premium is also positive, whilst the opposite outcome is obtained in the case of the most skilled jobs, those which require a professional qualification, in this case the public sector pays a statistically significant lower wage.

4.2 Public Sector Wage Premium and Vertical Fiscal Transfers

Once we have found evidence of a positive and significant wage premium in favour of public employees, we now analyse how the magnitude of the wage premium is affected by the level of transfers provincial governments receive from the federal government. Table 4 reports the level of per capita transfers from the national government to provincial (local) governments. The first picture that emerges clearly from the figures reported is that there exists a large dispersion across provinces, with small and/or poor provinces receiving much higher transfers. In table 5 we report the Pearson correlation coefficients between the public sector wages relative to wages in the private sector, and per capita income transfers. With the exception of primary activities and current transfers, the correlation coefficients are positive and statistically significant. To further analyse this relationship we estimate our Mincer wage equation for the period 1996 to 2002, where the dummy controlling for worker i being employed in the public sector is interacted with the variable Transfers which measures per capita transfers from the National government to province p the urban area c is located in. We use two definitions for the variable Transfers, Total Tax Transfers, and Tax Transfers under the co-participation regime:

$$
\begin{aligned}
\ln(w_{i,t}) &= \alpha_i AGE_{i,t} + \alpha_2 (AGE_{i,t})^2 + \gamma_i MALE_i + \sum_{j=2}^{5} \omega_j TENURE_{j,i,t} + \\
&\quad \sum_{h=2}^{3} \psi_h EDUC_{h,i,t} + \lambda_1 PUB_{i,t} + \lambda_2 \sum PUB_{i,t} \ln(TR_{p,t}) + \mathbf{B'X} + u_{i,t} \quad (5)
\end{aligned}
$$

As with equation 3, equation 5 is estimated allowing for the interactions of $\sum PUB_{i,t} \ln(TR_{p,t})$ with the qualification dummies.

Similarly to what we did before, we estimate an alternative version of equation 5, but instead of using formal education to distinguish between workers with different skills, we use the four dummy variables to control for the skills required by the job person i is employed in:

$$
\begin{aligned}
\ln(w_{i,t}) = {} & \alpha_i AGE_{i,t} + \alpha_2 (AGE_{i,t})^2 + \gamma_i MALE_i + \sum_{j=2}^{5} \omega_j TENURE_{j,i,t} + \\
& \sum_{h=2}^{4} \psi_h QUAL_{h,i,t} + \lambda_1 PUB_{i,t} + \lambda_2 \sum PUB_{i,t} \ln(TR_{p,t}) + \textbf{B'X} + u_{i,t} \quad (6)
\end{aligned}
$$

As with equation 3, equation 6 is estimated allowing for the interactions of $\sum PUB_{i,t} \ln(TR_{p,t})$ with the education dummies.

Table 6 reports the outcomes for different specifications of equations 5 and 6. The first result that emerges is that the positive wage premium paid by the public sector increases with the level of transfers received from the Federal government (coefficient λ_2 is positive and statistically significant): an 1% increase in per capita transfers increases the public sector wage premium between 0.071% and 0.104%. When allowing to the effect of transfers to vary across workers with different education levels, we have that an increase in the transfers from the national to local governments has a positive and significant effect on the wage premium of workers independently of their formal education, however this effect decreases as the workers education increases, while for people with incomplete high school or less a 1% increase in per capita transfers raises the wage premium paid by the public sector by 0.088%-0.099%, in the case of workers with complete tertiary/university the effect is just between 0.007%-0.0097%. A similar result is obtained when workers are distinguished in terms of the skills requirements of the job they do, now, a 1% increase in per capita transfers increases more the public sector wage premium of jobs requiring less skilled workers (0.067%-0.108%) than for jobs which require a technical of professional qualification (0.004%-0.019%).

4.3 Fiscal Transfers and Private Sector Wages

In the previous two sections we have shown that after controlling for personal and other characteristics, the public sector pays a wage premium relative to the wages paid by the private sector. This wage premium increases with the level of per capita transfers from the national government to local ones. In both cases, the results show that the effects are larger in the case of less educated/skilled workers. These findings constitute evidence favouring our hypothesis that the private sector confronts a harder competition from the public sector at the moment of hiring employees in those provinces which receive larger transfers from the central government. This increasing competition from the public sector may help to explain why in these provinces the importance of footloose activities, such as the case of manufacturing production, is less important[5].

The second issue we made reference at the beginning of this section was related to the question if there is a relationship or not between the level of transfers local governments receive from the federal administration, and wage rates in the private sector, more specifically those sectors which are more easily relocated among regions in the face of cost differentials, such as manufactures. To deal with this question we estimate a Mincer wage equation for workers

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[5]Excluding the province of San Luis, where the scheme of industry promotion has been, under certain criteria, very successful, there exists a negative and statistically significant correlation between Manufacturing GDP and Tax Transfers from the central government, both measured in per capita values. Further more, if we also exclude the province of La Rioja, where the large size of its manufacturing GDP is very suspicious considering other economic and social variables, the negative correlation between Manufacturing GDP and Tax Transfers from the central government becomes even stronger as well as more significant. When no province is excluded, the correlation coefficients remain negative, but they lose their statistical significance.

employed in the manufacturing sector, and include as explanatory variable the level of per capita transfers received by the government of the province the worker live in. More specifically, we estimate the following two equations:

$$\ln(w_{i,t}) = \alpha_i AGE_{i,t} + \alpha_2 (AGE_{i,t})^2 + \gamma_i MALE_i + \sum_{j=2}^{5} \omega_j TENURE_{j,i,t} +$$
$$\sum_{h=2}^{3} \psi_h EDUC_{h,i,t} + \theta \ln(TR_{p,t}) + \mathbf{B'X} + u_{i,t} \qquad (7)$$

$$\ln(w_{i,t}) = \alpha_i AGE_{i,t} + \alpha_2 (AGE_{i,t})^2 + \gamma_i MALE_i + \sum_{j=2}^{5} \omega_j TENURE_{j,i,t} +$$
$$\sum_{h=2}^{4} \psi_h QUAL_{h,i,t} + \theta \ln(TR_{p,t}) + \mathbf{B'X} + u_{i,t} \qquad (8)$$

As with the previous equations, we allow for our variable of interest (TR) to interact with the education dummy variables (in the case of equation 7) and with the skill requirement dummies (in the case of equation 8). Table 7 reports the results from the estimation of equations 7 and 8. Overall, we find no statistical relationship between the wage rate in the manufacturing sector and transfers from the national to local governments. However, when we distinguish between different types of workers, there is a positive and significant effect of transfers on wages paid to workers with less formal education (incomplete high school or less), for the other two groups the coefficients are also positive but not significant. When workers are distinguished according to the skills required by the job they do, there is a positive, but not significant, relationship between transfers and wages for those jobs requiring no qualification or an operative qualification. In the case of jobs which requires more skilled workers (a technical or professional qualification), the effect of transfers on wages rates is negative and statistically significant. These results means that, if any, vertical transfers from the central government put a pressure on the wages paid by the private sector to workers that are at the bottom of the skill distribution.

5   Summary and Conclusions

One of the main objectives of inter-governmental fiscal transfers in federal countries is to help alleviate regional disparities while laying the foundations for sustainable economic growth in the poorest regions. Similarly, theories from the regional economics literature predict that lower wages in the provinces would lead to higher accumulation fostering growth prospects. One striking observations in the Argentine context is that, despite the existence of a long-standing system of inter-governmental federal transfers and a significant excess labour supply in the provinces, there are no signs of economic convergence between rich and poor regions taking place.

We argue that one likely explanation for this phenomenon is the existence of institutional wages (as opposed to productivity wages) which is explained by the prevalence of a nation-wide labour market benchmark. In these conditions, the wage differential between regions is either absent or not large enough to stimulate investment and accumulation in the less favoured provinces. In line with earlier work, we also argue that this situation is the result of large federal transfers finding their way into the public administration rather than into the private sector. In

other words, the private sector faces strong competition from the public sector in regional labour markets and this further discourages private investment in the provinces.

We test our theoretical predictions using a Mincer-type equation. We find empirical support for our hypothesis that the public sector pays a wage premium relative to the wages paid by the private sector. As we expected, this premium is increasing in the level of federal transfers per capita. As a further confirmation of our theoretical presumptions, we find no significant evidence suggesting that federal transfers have an effect on wages in the private manufacturing sector at the aggregate level. However, when we incorporate the level of education and/or job qualification into the model, we find evidence suggesting a significant and positive relationship between federal transfers and wages paid to workers with less formal education. Finally, we find that for jobs requiring a technical or professional qualification the relationship between wages and federal transfers is negative and significant. This latter finding suggests another channel through which large federal transfers discourage investment in the private sector and particularly in those activities intensive in skilled labour.

Overall, our results in this paper confirm previous results while offering new light on the detrimental effects of an inter-governmental transfer system when regional labour markets operate in much the same way as the single nationwide labour market. Similarly, our findings go some way towards explaining the persistence of regional differences and the lack of economic convergence.

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Table 1: Average wage in the public and private sectors, 1996-2002

Urban Area	Public Sector	Private Sector			
		All Sectors	Primary Sectors	Manufactures	Other Sectors
Bahía Blanca	4.69	3.35	2.45	3.82	3.26
Ciudad de Buenos Aires	7.49	5.39	9.05	5.83	5.29
Comodoro Rivadavia	5.54	3.90	5.90	3.35	3.55
Concordia	3.72	2.15	1.64	2.20	2.22
Conurbano	4.59	3.49	2.88	3.51	3.48
Corrientes	3.39	2.05	2.88	2.52	1.99
Formosa	3.58	1.82	1.88	1.82	1.81
Gran Catamarca	4.16	2.20	2.43	2.20	2.20
Gran Córdoba	5.04	2.90	2.86	3.03	2.8
Gran La Plata	4.75	3.54	2.78	3.76	3.52
Gran Mendoza	4.71	2.75	3.38	2.86	2.70
Gran Resistencia	4.30	2.19	1.64	2.03	2.21
Gran Rosario	4.31	3.17	4.27	3.17	3.16
Gran San Juan	4.53	2.41	2.33	2.43	2.41
La Rioja	4.32	2.46	2.24	2.60	2.42
Mar del Plata y Batan	4.99	3.29	3.49	3.19	3.31
Neuquén y Plottier	5.09	3.40	5.49	3.38	3.22
Paraná	4.19	2.63	1.94	2.55	2.65
Posadas	4.50	2.21	2.94	2.04	2.22
Río Cuarto	5.05	2.70	2.54	2.37	2.76
Río Gallegos	6.07	3.73	6.83	3.02	3.45
S.M. de Tucumán y Tafí Viejo	4.41	2.43	2.69	2.53	2.41
Salta	4.07	2.25	2.14	2.19	2.26
San Luis y El Chorrillo	4.12	2.61	2.37	2.95	2.44
San S. Jujuy y Palpala	3.82	2.07	1.79	2.00	2.09
Santa Fe y Santo Tomé	4.58	2.86	1.26	2.87	2.86
Santa Rosa y Toay	4.40	2.64	1.89	2.49	2.68
Sgo. del Estero y La Banda	4.41	2.09	2.34	2.15	2.08
Tierra del Fuego	7.92	4.73	5.91	5.75	4.35

Includes only people reported as employees, aged between 18 and 65 years old, receiving a positive wage. Source: own calculations based on Encuesta Permanente de Hogares (EPH).

14

Table 2: Public and Private Employment Characteristics, Means 1996-2002

	Public Sector	Private Sector
Age (years)	40.2	35.4
Tenure (years)	10.5	5.3
Male (%)	47.0	61.2
Incomplete high school (%)	32	56
Incomplete tertiary/university (%)	34	34
Complete tertiary/university (%)	33	10
The job requires no qualification (%)	13	33
The job requires an operative qualification (%)	36	48
The job requires a technical qualification (%)	35	14
the job requires a professional qualification (%)	16	5

Source: own calculations based on EPH

Table 3: Estimated Wage Premium

Controlling by education	1996	1997	1998	1999	2000	2001	2002
Wage premium (overall)	6.6[a]	10.2[a]	9.8[a]	9.1[a]	8.8[a]	9.8[a]	10.0[a]
Wage premium (incomplete high school)	6.9[a]	8.0[a]	8.8[a]	7.3[a]	8.6[a]	9.2[a]	11.5[a]
Wage premium (incomplete tertiary/university)	12.8[a]	15.9[a]	16.0[a]	11.8[a]	12.6[a]	14.1[a]	13.0[a]
Wage premium (complete tertiary/university)	-1.6	6.7[a]	4.6[a]	8.4[a]	5.0[a]	6.1[a]	4.8[a]

Controlling by job skill requirements	1996	1997	1998	1999	2000	2001	2002
Wage premium (overall)	5.7[a]	7.3[a]	7.6[a]	7.9[a]	6.2[a]	7.8[a]	6.3[a]
Wage premium (no qualification)	3.9[b]	6.3[a]	10.6[a]	8.9[a]	7.5[a]	11.7[a]	13.1[a]
Wage premium (operative qualification)	7.2[a]	8.9[a]	13.3[a]	13.8[a]	10.2[a]	12.7[a]	10.8[a]
Wage premium (technical qualification)	13.0[a]	11.5[a]	5.2[a]	4.8[a]	6.5[a]	6.2[a]	2.1[a]
Wage premium (professional qualification)	-16.7[a]	-8.9[a]	-5.0[b]	-0.3[a]	-9.2[a]	-8.0[a]	-9.9[a]

(a) Significant at 1% level; (b) Significant at 5% level. Source: own calculations based on EPH

Table 4: Per Capita Income Transfers from the National Government: Current 1996-2002 average*

Urban Area	Total Tax Transfers	Co-participation	Current Transfers
Bahía Blanca	0.27	0.15	0.01
Ciudad de Buenos Aires	0.06	0.05	0.02
Comodoro Rivadavia	0.69	0.36	0.07
Concordia	0.66	0.43	0.03
Conurbano	0.27	0.16	0.01
Corrientes	0.62	0.40	0.04
Formosa	1.09	0.74	0.06
Gran Catamarca	1.28	0.86	0.04
Gran Córdoba	0.43	0.29	0.02
Gran La Plata	0.27	0.16	0.01
Gran Mendoza	0.40	0.26	0.02
Gran Resistencia	0.74	0.52	0.04
Gran Rosario	0.44	0.29	0.02
Gran San Juan	0.86	0.57	0.06
La Rioja	1.17	0.75	0.86
Mar del Plata y Batan	0.27	0.15	0.01
Neuquén y Plottier	0.60	0.33	0.09
Paraná	0.65	0.43	0.03
Posadas	0.55	0.34	0.08
Río Cuarto	0.42	0.29	0.02
Río Gallegos	1.49	0.79	0.30
S.M. de Tucumán y Tafí Viejo	0.54	0.36	0.04
Salta	0.56	0.36	0.05
San Luis y El Chorrillo	1.02	0.65	0.03
San S. Jujuy y Palpala	0.73	0.46	0.10
Santa Fe y Santo Tomé	0.44	0.29	0.02
Santa Rosa y Toay	1.01	0.62	0.10
Sgo. del Estero y La Banda	0.83	0.55	0.05
Tierra del Fuego	1.73	0.79	0.54

* Figures are total values for the Province the urban areas is located in. Source: MECON

Table 5: Correlation Coefficients between Public Sector Relative Wages and Other Variables

	Private Sectors	Federal Transfers Income (per inhabitant)		
		Total Tax Transfers	Coparticipation Regime	Current Transfers
Public Sector Relative Wage with respect to:	All Sectors	$0.388^{(b)}$	$0.520^{(a)}$	0.096
	Primary Activities	-0.018	-0.096	-0.087
	Manufactures	$0.312^{(c)}$	$0.424^{(b)}$	0.013
	Other Sectors	$0.523^{(a)}$	$0.619^{(a)}$	0.195

(a) Significant at the 1% level; (b) significant at the 5% level; (c) significant at the 10% level. Source: own calculations based on EPH and MECON

Table 6: OLS Regressions: Public wage premium and federal transfers - By education/skill level

Variable	(1)	(1)	(2)	(2)	(1)	(1)	(2)	(2)
PUB	0.1277[a]	0.1404[a]	0.1740[a]	0.1860[a]	0.1095[a]	0.1364[a]	0.1621[a]	0.1950[a]
	(0.0042)	(0.0046)	(0.0051)	(0.0056)	(0.0042)	(0.0048)	(0.0051)	(0.0059)
TR*PUB	0.0735[a]		0.0849[a]		0.0806[a]		0.0950[a]	
	(0.0033)		(0.0034)		(0.0032)		(0.0034)	
TR*PUB*EDUC(INCOMPHS)		0.0914[a]		0.1043[a]				
		(0.0050)		(0.0046)				
TR*PUB*EDUC(INCOMPTER)		0.0338[a]		0.0529[a]				
		(0.0044)		(0.0043)				
TR*PUB*EDUC(COMPTER)		0.0071[a]		0.0098[a]				
		(0.0005)		(0.0005)				
TR*PUB*QUAL(NOQUAL)						0.1008[a]		0.1201[a]
						(0.0070)		(0.0059)
TR*PUB*QUAL(OPERQUAL)						0.0723[a]		0.0953[a]
						(0.0044)		(0.0044)
TR*PUB*QUAL(TECHQUAL)						0.0044[a]		0.0081[a]
						(0.0004)		(0.0004)
TR*PUB*QUAL(PROFQUAL)						0.0163[a]		0.0195[a]
						(0.0007)		(0.0007)
Observations	265673	265673	265673	265673	265346	265346	265346	265346
Adjusted R2	0.458	0.458	0.459	0.459	0.466	0.467	0.467	0.467

Note: ohter included variables are age, age^2, $male\ dummy$, $tenure\ dummies$, $education\ (skill)\ dummies$, $time\ dummies$, $education\ (skill)\ dummies$, $sector\ dummies$, and $city\ dummies$. Robust standard errors in parentheses. (a) Significant at 1% level; (b) significant at 5% level; (c) significant at 10% level. In (1), the transfer variable is Total national tax transfers. In (2), the transfer variable is Tax national transfer due to Co-participation regime

Table 7: OLS Regressions: Private (manufacturing) wages and federal transfers - By education/skill level

Variable	(1)	(2)	(1)	(2)	(1)	(2)	(2)
TR	0.0369 (0.0489)	-0.0001 (0.0329)			0.0768 (0.0495)	0.0124 (0.0249)	0.0270 (0.0334)
TR*EDUC(INCOMPHS)	0.1178[a] (0.0300)	0.0985[a] (0.0278)					
TR*EDUC(INCOMPTER)			0.482 (0.0295)	0.0285 (0.0275)			
TR*EDUC(COMPTER)			0.0148 (0.0133)	0.0072 (0.0123)			
TR*QUAL(NOQUAL)					0.0124 (0.0249)		-0.0044 (0.0249)
TR*QUAL(OPERQUAL)					0.0275 (0.0232)		0.0097 (0.0229)
TR*QUAL(TECHQUAL)					-0.0431[a] (0.0086)		-0.0486[a] (0.0082)
TR*QUAL(PROFQUAL)					-0.0349[a] (0.0131)		-0.0412[a] (0.0131)
Observations	30844	30844	30844	30844	30809	30809	30809
Adjusted R2	0.422	0.420	0.422	0.409	0.412	0.412	0.409

Note: ohter included variables are age, age^2, $male$ $dummy$, $tenure$ $dummies$, $education$ ($skill$) $dummies$, $time$ $dummies$, $sector$ $dummies$, and $city$ $dummies$. Robust standard errors in parentheses. (a) Significant at 1% level; (b) significant at 5% level; (c) significant at 10% level. In (1), the transfer variable is Total national tax transfers. In (2), the transfer variable is Tax national transfer due to Co-participation regime