This paper is an extension of another paper presented at the Annual Meeting of the Argentine Economic Association, Bahia Blanca, 1997. That paper intended to examine the behaviour of economic aggregates for Argentina in the period 1990-1995 by means of an econometric model, initially constructed for descriptive purposes. See Baccino (1997). Now, the present work introduces two blocks of equations regarding the exports and the labour markets. The models will be used to answer a number of relevant questions for present Argentina such as:

(i) Is Argentina very vulnerable to a depreciation of the Brazilian currency?

(ii) Do flexibility reforms in the labour market have an important impact in employment?

(iii) If the impact in absorbing unemployment is significant, what happens to the wage rate?

(iv) Who are the real beneficiaries of the introduction of flexibilities in the labour market?

(v) Are these changes expected to last?

Now it is also attempted to modify last year model firstly by correcting serial correlation in the consumption function to use it for predictive purposes and secondly by including some complementary submodels of export and labour markets above mentioned. The export market model allows to solve endogenously some variables that enter as predetermined variables in the previous model. The introduction of this submodel makes easier the handling of the original macroeconomic model. In the new estimates the sample period was maintained in order to keep common constraints in the estimation methodology with the previous model. The labour market model only describes the conditions prevailing in the period of analysis and shows how rigid is the market behaviour in that sector. Sources of data used are detailed in Appendix A.

The final macroeconomic model will consist of three blocks of equations. Block 1 include GDP, and other aggregates. Block 2 depicts aggregate export market and Block 3 deals with demand and supply functions in the labour market.

The demand and supply for exports were estimated on the basis of a multiequation system which was also corrected for serial correlation in the residuals.

The measurement of demand and supply of labour was performed in order to deal with the unemployment problem. This last part has been constructed for descriptive purposes within the same sampling period as other equations.

The three blocks of equations and the derived reduced-form coefficients are presented in Appendix B.

* I am very grateful to Juan Carlos de Pablo for his helpful suggestions.
1. The consumption function adjustment

Now, the consumption function obtained in the original model was corrected for the serial correlation on residuals. The method applied to deal with autocorrelation in two-stage least squares equation was equivalent to Sargan's treatment\(^3\). Other variants have been developed by Amemiya (1966) and Fair (1970). The method used in this paper consisted of: a first step procedure to regress the endogenous explanatory variables on all the predetermined and lagged predetermined variables for 24 observations. A second step corresponded to the application of generalized differencing by iterative estimation of rho, that is the first-order correlation coefficient of the residuals. In all cases, it was assumed that residuals follow a one-variate first-order autoregressive process, with diagonal matrix of rho's.

The Cochrane-Orcutt procedure was used to correct the function for first order serial correlation. The coefficient of correlation chosen is $\rho = 0.52423$.

The new equation is,

$$C_t = 0.36299 + 0.64566 Y_t + 0.18445 Y_{t-1} + 0.11277 \frac{M3}{p}$$

\[0.002\] \[9.446\] \[3.012\] \[1.339\]

$R^2 = 0.892087$  $F(3,20) = 55.111$  $\sigma = 59.911$  $DW = 2.22$

In this paper the figures between brackets under the coefficients are the t-values while in the previous work the figures between parenthesis were standard deviations. The first iteration produced a DW that accepts the null hypothesis of no serial correlation. The upper critical d equals 1.66 for three independent variables and 24 observations at a five percent of significance.

This consumption function will replace the consumption equation originally estimated in the model and is included in the block 1 in Appendix B. The substitution of the corrected consumption function for the original one does not affect significantly the measure of the prediction error in the sampling period both for consumption and other variables of the block 1. The root-mean-square simulation error divided by the mean value of the variable for consumption is 4.62%.

2. The Argentine Exports Market

In the Argentina 1990-1995 model, (Baccino. 1997), quarterly exports behaved as a predetermined variable. Now a new model or subsystem was estimated by considering exports and terms of trade as endogenous and introducing the indexes of gross domestic product of Brazil and of the Argentine real wage rate prevailing in the previous quarter as predetermined. A subscript $t$ denotes the current quarterly period and export magnitudes are expressed in thousands of constant Argentine pesos of 1986.

The demand and supply functions for quarterly exports obtained by IV/2SLS for the period 1990-1995 are,

$$X_t = - 0.19978 t + 6.5452 Ybra \_t - 463.65 \quad \text{(demand function)} \quad (1)$$

\[-0.307\] \[5.084\] \[-4.561\]
\[ \sigma = 24.3702 \quad DW = 1.31 \quad RSS = 11878.15491 \quad \text{Reduced Form} = 24.6691 \quad \text{Testing } \beta = 0: \]
\[ \chi^2(2)/2 = 53.405 \]

\[ \text{tot}_t = 0.2021 \ X_t + -1.251 \ (w/p)_{t-1} + 166.22 \]
\[ [2.768] \quad [-2.389] \quad [2.555] \]

\[ \sigma = 16.5579 \quad DW = 0.892 \quad RSS = 5483.25499 \quad \text{Reduced Form} = 15.0126 \quad \text{Testing } \beta = 0: \]
\[ \chi^2(2)/2 = 11.795 \]

The \( \chi^2 \) statistic, which is standardized by \((k-1)\) degrees of freedom, has approximately an \( F(k-1, \infty) \) distribution (Doornik and Hendry).

In the demand equation the coefficient of the terms of trade has the expected negative sign but it is not significant. On the contrary, in the supply function the coefficient linking the terms of trade with exports is significantly greater than zero.

Both equations show serially correlated residuals. Therefore, they have to be re-estimated. Before correcting the equations it is convenient to analyze the meaning of the coefficients.

Foreign demand for exports depends negatively on the level of terms of trade, that is, on the ratio of export prices to import prices. Import prices are given in foreign currency and the exchange rate of Argentina is constant under the convertibility system since 1991(2). The higher the price of exports (so are terms of trade) the less demand for Argentine goods and services. Terms of trade reflect price effects. Gross domestic product index of Brazil measures the level of economic activity of the importing country. This country is an important buyer of Argentine products. A 33% of total exports of Argentina were shipped to the Mercosur region. Therefore, the coefficient of \( Y_{brat} \) is positive and significant.

On the other hand, the domestic supply of exports varies positively with the terms of trade as expected. The higher the price of exports, then the greater should be the supply of exports. The lagged real wage rate captures the effect of substitution between domestic and external markets. A high real wage rate in the previous quarter is associated with a low rate of profit in the domestic market. Consequently this implies a positive impulse to expand exports at given terms of trade in the current quarter. Conversely, when the real wage rate was low, the rate of profit might be high, and this implies less exports at given terms of trade in the current quarter.

**Corrections for serial correlation**

The demand and supply equations (1) and (2) were corrected for a first-order autoregressive process.

a) Demand for Exports.

The correction applied consists of an equivalent to Sargan's approach expressed in 2SLS, in view of the small number of instrument variables. The two-step procedure was done including all lagged variables, both endogenous and exogenous in the first-stage regression. After the Hildreth-Lu treatment of grid search the second-stage regression was estimated. Finally the choice was done on the case that minimized the sum of squared residuals.
Then, a slight problem appeared. The terms of trade coefficient in the demand equation was not significantly different from zero. The corrected demand function showed a change in sign. To avoid this situation, some modifications were made to the correction method for serial correlation. The aim was to retain the negative sign even when that coefficient kept non significantly different from zero. The modification chosen was to include in both stage regressions a trend term.

This modification consisted of considering a demand function for export with a trend component that could separate other influences on the terms of trade coefficients. The variable "trend" takes the following values: 41 for 1990(1); 42 for 1990(2); and so on up to 64 for 1995(4).

The demand for exports obtained is,

\[ X_t = -1.0275 \text{ tot}_t + 5.5959 \text{ Ybrat}_t - 506.01 + 4.62653 \text{ trend} \]  
\[ R^2 = 0.862902 \quad F(3, 18) = 37.764 \quad DW = 1.86 \]

The rho chosen in the correction is 0.273. The DW statistic is higher than the corresponding upper value in the Durbin-Watson table, \( d_u = 1.66 \) for 22 observations and 3 explanatory variables (excluding the constant term). Therefore, the null hypothesis of non serial correlation is accepted.

b) Supply of Exports

The generalized differencing transformation process of Cochrane-Orcutt was applied. Similar results were obtained by grid search of Hildreth-Lu method. Therefore, the following equation for the supply of exports came out after five iterations.

\[ \text{tot}_t = 0.0703 \text{ X}_t + 0.6274 (w/p)_{t-1} + 39.7692 \]  
\[ R^2 = 0.0888 \quad F(3, 19) = 0.92594 \quad DW = 2.10 \quad \rho = 0.86657 \]

The correction of first-order serial correlation ended with the degree of significance of the equation. A particular relationship took place. When tracing out a rho consistent with the minimum sum of squared residuals for the computation of the second-stage regression, the \( R^2 \) was weakened, and so it happened to the degree of significance of the coefficients. It seems that serial correlation might be of a higher order.

However, if the search for minimum sum of squared residuals, according to the Hildreth-Lu procedure, is replaced by the minimum conditioned to a 5% significant coefficient of determination the supply equation is,

\[ \text{tot}_t = 0.1313 \text{ X}_t - 0.6498(w/p)_{t-1} + 132.2062 \]  
\[ R^2 = 0.0888 \quad F(3, 19) = 0.92594 \quad DW = 2.10 \quad \rho = 0.86657 \]
Now, the coefficient of X becomes more significant and so is the $R^2$.

The DW is inconclusive but some serial correlation has been corrected. This equation went to the model and keeps the signs it had before the correction. Finally, the export market consists of equations (1') and (2'').

These problems of serial correlation corrections might arise from the existence of higher order autocorrelations and are particularly increased by the smallness of the sample. The loss of degrees of freedom was originated in the application of different methods of correction for two stage least squares make more difficult the solution of the problem.

**Results in the Exports Market**

To have an approximate idea of the relevant range of elasticities the slopes of the estimated equations were related to the observed ratio of the endogenous variables having so a measure of price elasticity for demand and supply. While the slopes are estimates the actual observed values include the residuals. Therefore, this are not accurate estimated elasticities, but a rough approximation to the limiting values of real elasticities.

Within the sampling period demand elasticity attained a minimum of -0.49 and rose to a maximum of -0.25. The average value for that elasticity is -0.35.

On the other hand, the supply elasticity varies between a minimum of 1.85 and a maximum of 3.60 with a mean of 2.59. The values of elasticities underwent strong fluctuations within the sample.

The low price elasticity of demand supports the idea that a given devaluation in the currency of the demanders of Argentine goods and service will have a smaller effect in trade than income effects in Brazilian economy. Their recessions may be much more harmful to Argentina than a currency devaluation, at least, as follows from the existing data. A Brazilian devaluation should shift proportionately the demand for exports by a third of the full devaluation rate.

Nevertheless, there might be a conclusion that the time series of terms of trade does not provide an adequate indicator of effective price ratios. This is a limitation derived of existing price index statistics in Argentina where it is no easy to obtain a consistently elaborated index por long periods of time. Anyway, accepting that the proxy for terms of trade has limitations, some elasticities has been detected and this help to get a consistent idea of the behaviour of the market. This leaves the task of obtaining price indicators of higher quality as a proposal for other research work.

So far, the income effects from abroad are important in shaping demand for Argentine exports and it show a well known dependence on the Brazilian market as a buyer for the products of Argentina.

The aim of this block is to provide the estimates of some predetermined variables required by the equations of the block 1.
The pair of equations included in the block 2 were evaluated with respect to their impact simulation characteristics as a model. The root-mean-square simulation error was calculated for total exports and terms of trade. The RMS was divided by the sample mean of the corresponding variable in the period 1990-1995 thus obtaining a percentage coefficient of variation of impact simulation. Exports coefficient is 8.4% and terms of trade coefficient is 13%.

3. The Labour Market

Employment and unemployment figures show some complex behaviour at first sight. In the sample period utilized for estimating the model there has been a substantial growth in the level of economic activity, increases in the level of employment, an increasing trend in unemployment and slight declines in the real wage rate. The attempt to separate the functions of demand and supply for labour was not an easy task. Therefore it was necessary to measure different factors affecting these functions to reach the specification stated below.

The difficulties in discriminating demand from supply stem from important transformations that were taking place in the economy in the period under analysis. Moreover, the process of reallocation of resources produced by the state reforms, economic stability, and normalization of rational economic activity produced important changes in productivity measured ex post. That outcome is often explained as entirely dependent on the adoption of new technologies, particularly labour-saving ones. Nevertheless, this author thinks that the increase in productivity does not always derive of labour-saving new technologies but to some extent is the outcome of changes in the ways of managing both private and public firms.

As far as the process of transformation goes on, changes in productivity arise also from operating the same plants in an efficient way thus replacing the previous administration highly conditioned by regulatory measures that supported protection and subsidies. The reform of the State not only frees labour from public employers but compels the private sector to become more efficient too. A process of more efficient reallocation of resources should give place to an increased competition in the production factor markets. However, it seems that the Argentine labour market does not show many traces of increases in competition. It seems rather to behave within a rigid institutional setup that affects the behaviour of the markets participants, both labourers and employers. The present analysis is focused on this subject and the first aim was to identify the relevant factors that determines labour demand and supply.

The estimation of labour demand and supply was made by IV/2SLS, as were other simultaneous equation systems in this research. Next, many attempts were made to correct the existence of first order serial correlation but it was not possible to reach meaningful results. Sargan’s, Amemiya’s and Fair’s methods were tried but the small sample did not resist the test. Very often the $R^2$ became unmeaningful and so happened to the regression coefficients which in addition they suffered changes of sign.

Since this subsystem of the model is not essential for the functioning of the rest and may be used only for descriptive purposes, no correction for autocorrelation was made. The difficulties described in the correction for demand and supply of exports also apply to the labour market sample. In addition, it must be said that there is a lagged dependent variable in the labour supply equation.

The 2SLS demand for labour equation obtained is,
\[ N_t = -50.869 \ (w/p)_t + 0.42931 \ Y_{t-1} - 44.278 \ t + 18283 \quad (1') \]
\[
\begin{bmatrix}
-4.756 \\
1.575 \\
-3.163 \\
11.565
\end{bmatrix}
\]
\[ \sigma = 179.876 \quad DW = 0.66 \quad RSS = 614754.6331 \quad Reduced \ Form = 142.281 \ Specification \]
\[ \text{Chi}^2(1)/1 = 3.0351 \quad \text{Testing } \beta = 0: \text{CHI}^2(3)/3 = 16.482 \]

and the supply for labour is,
\[ (w/p)_t = 0.0013723 \ N_t + 0.0074048 \ U_{t-1} + 0.53805 \ (w/p)_{t-1} - 0.91167 \ t + 66.781 \quad (2') \]
\[
\begin{bmatrix}
0.046 \\
0.357 \\
1.537 \\
-0.521 \\
0.201
\end{bmatrix}
\]
\[ \sigma = 2.82014 \quad DW = 0.678 \quad RSS = 143.1577945 \quad Reduced \ Form = 2.76328 \quad \text{Testing } \beta = 0: \text{CHI}^2(4)/4 = 33.723 \]

The demand for labour have significant coefficients in employment and trend. On the contrary, the significance is lost in lagged income. The real wage of demand function varies negatively with respect to employment. This denotes the existence of diminishing returns in the utilization of labour in production. The main outcome is that there is a chance to enhance employment if the real wage rate is allowed to go down. Aggregate income of the previous quarter has a positive effect in demand price of labour since it captures the idea of the level of demand for goods. Next, the declining trend reflects a situation of continued rationalization of the productive process through reforming the State. This is a declining trend in demand due to a reduction in the number of inefficient firms. For different reasons employers become more cautious when offering jobs.

The estimate of the supply of labour looks more unstable. Their coefficients are not meaningful but their signs are interesting to suggest some hypothetical behaviour in a labour market where there is persistent unemployment. Anyway, one can analyze different alternatives of suppliers' behaviour with respect to the specified demand and see how it feeds back on unemployment.

Firstly, let examine the observed relation irrespective of the standard deviation of their coefficients. Those coefficients are consistent with the phenomena they are supposed to reflect.

The estimated supply function shows a positive relationship between current real wage and employment. The influence of predetermined variables refers to the behaviour of a component of the total labour supply that either is already employed or has easier access to be employed. This labourer has particular attitudes regarding conditions prevailing in the markets, such as wages, bargaining power, persistent unemployment and the belief to be attached to the wage ruling in the past quarter.

The effect of lagged unemployment is an increase in the supply price of labour because that unemployment is associated with a higher productivity of labour. The labour sector presses the wage rate upwards. The other effect of the positive influence of the real wage rate of the previous quarter reflects a lagged impulse concerning the conditions prevailing in the market. Finally there is a negative trend component which reflects the permanent conditions for persistence in unemployment.

This behaviour refers to a market where a decline of demand for labour is concentrated on certain kinds of labour particularly unskilled and of low productivity. The conditions of competition does not apply to the same extent to all qualities of manpower. The effects of effective demand on the labour market mixes different shapes, some reflect long-run
movements in the reallocation of resources with increasing efficiency, some other reflects the business cycle, and so on.

One can assert that the equation estimated has to be considered as a supply function of insiders or close substitutes of this status. The current unemployment does not stress the competition for jobs and presses the wage rate down. Under these circumstances, there is simultaneously voluntary and involuntary unemployment.

To solve this riddle, it is necessary to analyze the process of wage rate determination dynamically and this goes further than what the present modelling allows. To have an idea of the elasticity values of demand and supply of labour in the sampling period, the coefficients were estimated by using the ratio of observed values of N and w/p multiplied by the corresponding derivative obtained from the regression coefficient.

The elasticity of the demand for labour with respect to the real wage rate varies between a minimum of -0.51 and a maximum of -0.38 with a mean value of -0.41.

Supply elasticity varies between a minimum of 5.57 and a maximum of 7.54 with a mean elasticity of 6.07.

These figures show that the demand for labour is rather inelastic while the labour supply is very elastic. The range of variation observed suggests that a wage reduction produce a stronger decline in supply of labour than the increase in demand due to the reduction in the real wage rate. In an economy where prices are stable, changes in the real wage rate describe changes in money wages.

The higher the wage rate elasticity of supply, there are more grounds to maintain the hypothesis of dichotomic behaviour of labourers with the mix of voluntary and involuntary unemployment.

On the other hand, an alternative is to assume the elasticity equal to zero. In these case all unemployment is involuntary.

The coefficient of variation of the prediction error of the endogenous variables determined by the block 3 are: 1.1% for employment and 2.5% for the real wage rate.

Wages and unemployment

The model of the labour market reflects the conditions of demand and supply and its impact on current employment. The labour force used in the calculations is the employed. Consequently, the model describes employment. Next, one has to connect these results with the persistent prevailing unemployment. On the basis of the observed rate of unemployment a convenient exercise of computation would be to introduce unemployment into the picture and to estimate an hypothetical inclusion of those unemployed in the total supply.

Therefore, a regression was computed with an analogous specification to the already estimated supply of labour. The estimation was done by ordinary least squares. In the place of employment the numbers of unemployed were assigned as potential suppliers.

\[
(w/p)_t = 0.003853 N^*_t + 0.0035025 U_{t-1} + 0.50981 (w/p)_{t-1} - 0.93693 t + 87.447 \\
[1.040] \\
[0.945] \\
[3.231] \\
[-3.150] \\
[3.209]
\]
R² = 0.893      F(4,18) = 37.499      σ = 2.684      DW = 0.681

where Nₜ = Uₜ

The existence of serially correlated errors is expected and provides a link with other hypothesis of persistent unemployment usually developed in dynamic terms by several authors.

The regression was summed horizontally to the labour supply included in the block 3 along the Nₜ axis, in order to obtain a total labour supply (Lₜ). This function can be used to compute the voluntary employment and real wage rate if all labourers went into competition and were prepared to accept lower wages.

\[(w/p)ₜ = 0.001012 Lₜ + 0.00638 Uₜ₋₁ + 0.530633 (w/p)ₜ₋₁ - 0.9183 t + 72.208\]

Now, for a time period, the model can be used to compute employment and real wage rate, according the normal behaviour of a labour market. Next, the model can utilize the L function to estimate the employment and real wage rate arising from improved competition among insiders and outsiders. The period chosen was the year 1995 because it had the full impact of unemployment. The results of this exercise is shown in the following table:

<table>
<thead>
<tr>
<th>Year and Quarter</th>
<th>Normal Market Situation</th>
<th>Increased competition from unemployed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Employment (thousands)</td>
<td>Real Wage Rate Index</td>
</tr>
<tr>
<td>1995 (1)</td>
<td>12357.72</td>
<td>91.17</td>
</tr>
<tr>
<td>1995 (2)</td>
<td>12123.93</td>
<td>93.06</td>
</tr>
<tr>
<td>1995 (3)</td>
<td>11990.07</td>
<td>95.62</td>
</tr>
<tr>
<td>1995 (4)</td>
<td>12006.71</td>
<td>93.42</td>
</tr>
</tbody>
</table>

These estimates show that if the labour force were more homogeneous and competitive, the real rate might decline further and the demand for labour would absorb more then 115 thousand workers. Then the variations produced by the enhanced supply of labour would be the outcome of a more flexible market. Whether the actual unemployed could competitively join the labour market the wage would go down and employment would have risen by an average of 115290 labourers in the year 1995.

These calculations were made under the assumption that increased competition is obtained by a successful removal of rigid and costly labour laws and norms without affecting the shape of the demand function in the labour market. The estimate of increased employment refers only to supply effects. In fact institutional changes in the labour market are expected to modify both
supply and demand. No doubt that if changes in the shape of demand and supply take place it is likely that the impact on employment would be more important.

It is interesting to estimate the impact on employment derived from demand-and-supply effects of institutional changes in the labour market.

The existing labour legislation comprises rules regarding working day, vacation, statutory bonus, compensations for sickness, dismissal and notices, family allowances, social security taxes. Rigidities in the institutional context refer to norms that prevent the action of competition and free choice on part of labourers and employers. The way by which bargaining takes place between employers and trade unions are usually factors that affect the process of competition. The deficiencies in the judicial system plus some complex regulations in the labour market produce risks of legal proceedings and unexpected costs of employing labour over normal conditions. The expected losses of such contingencies are considered by employers when they take decisions to hire labour.

In this model, the institutional cost is assumed (and not estimated) just to evaluate an impact simulation. Formally, the cost to the employer will be denoted by the ratio of net marginal product to gross marginal product of labour. The expected loss derived from the institutional set up is spread over all labourers by effecting employers’ demand for labour. Net marginal labour productivity is the marginal product minus a percentage corresponding to the expected loss not directly expressed in the wage rate. This institutional cost so defined is a deadweight cost.

In Argentina, the existence of distortions in the labour market gives place to an expected cost of employing labourers paid out from the marginal product of labour. This is implicit in demand and supply functions of the labour market estimated by the model.

For the simulation exercise that institutional cost takes two alternative values, for example, a case with a loss of 16.6% in the MPL ($\phi = 0.833$) and a case with a loss of 33% ($\phi = 0.67$). The $\phi$’s represent the proportion of demand price of labour to the marginal product of labour. As it was mentioned above, the simulation exercise includes both demand and supply effects together derived from the removal of the rigidities in the labour market. The existence of this incremental cost works as a tax imposed upon the hiring of labourers, and has the same consequences.

### Employment and Real Wage Rate Index change with respect to the Normal Situation

<table>
<thead>
<tr>
<th>Year and Quarter</th>
<th>High Institutional Cost ($\phi = 0.833$)</th>
<th>Very high Institutional Cost ($\phi = 0.67$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Delta$Employment (thousands)</td>
<td>$\Delta$ Real Wage Index</td>
</tr>
<tr>
<td>1995 (1)</td>
<td>818.7</td>
<td>-1.05</td>
</tr>
<tr>
<td>1995 (2)</td>
<td>851.3</td>
<td>-1.43</td>
</tr>
</tbody>
</table>
These results show that the most significant effects of removing institutional rigidities are those operating on the demand side. Moreover, these effects are usually neglected by those who oppose flexibility measures on grounds that labourers would be worse off. On the contrary, this model shows that both labourers and employers as a whole will benefit from a more competitive market. The removal of the institutional cost does not imply a reduction in the social services and benefits which employees are entitled. It means to reduce its cost and particularly to remove an institutional cost that only impacts on the market in an indirect way.

The simulation exercise shows that, other things being equal, a deep reform program towards a more flexible market could produce significant increases in employment. This outcome emerges from increases in demand and supply. The insider-outsider mechanism will be weakened and the profitability of hiring more labourers would be more transparent. The improvements in competition will foster productivity and raise wages. The simulation exercise suggests that declines in wages would have been very small. A reduction in the institutional cost expands demand for labour and offsets further declines in wages.

The observed data of employment, unemployment and real wage rate are shown in the following table.

<table>
<thead>
<tr>
<th>Year and Quarter</th>
<th>Employment (000's)</th>
<th>Unemployment (000's)</th>
<th>Real Wage Rate Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995 (1)</td>
<td>12121.1</td>
<td>2201.6</td>
<td>92.7</td>
</tr>
<tr>
<td>1995 (2)</td>
<td>11957.1</td>
<td>2696.2</td>
<td>92.7</td>
</tr>
<tr>
<td>1995 (3)</td>
<td>12023.7</td>
<td>2530.9</td>
<td>92.5</td>
</tr>
<tr>
<td>1995 (4)</td>
<td>12023.7</td>
<td>2365.6</td>
<td>92.3</td>
</tr>
</tbody>
</table>

The simulation exercise shows how important can be an increase in the competition among labourers and employers. A more flexible market will not absorb total unemployment but it will have significant effects. The division of the market between insiders and outsiders or any other set of categories which reduce competition among workers prevents the rapid clearance of the market. And the main culprit is the institutional cost of employing labourers. Depending on the magnitude of the institutional cost, the labour reform may create many hundred thousands of jobs almost immediately.

The behaviours of labourers and employers as depicted by this model show patterns very similar to what in Europe is regarded as "structural unemployment". It corresponds to a case where the institutional framework creates obstacles to competition and produce increasing costs of employing labour (IMF. 1997).
The present static model describes a situation where demand and supply functions in the market coexist with persistent unemployment. In addition, it was also observed that the unemployed maintain a similar relationship with supply determinants like the employed, across the sample period. This makes the application of insider-outsider mechanisms to explain persistence. See Layard and Bean (1990). The insider mechanism rests on the power of unions to organize insiders to resist wage reductions and outsider mechanism rests on a declining pressure made by unemployed as the period of unemployment grows. These mechanisms affect both demand and supply.

The study of this characteristic in the labour market is usually done on the dynamic aspects of wage determination. The hysteresis approach states that employment follows a random walk with a drift. Therefore, unemployment depends on its past evolution. See Blanchard and Summers (1987). This characteristic may also be present in the Argentine experience though the approach should be dynamic. The present model describes statically a process which has important dynamic characteristics.

However, the econometric model has features that are coincident with the theoretical explanations mentioned above. It seems this particular behavior is not entirely dependent on the individual attitudes of market participants but these are influenced by rigidities of the institutional legal system. In Argentina, there are costs incurred when employing labor that interfere with the quick reallocation of resources. Even when the subsidies and social benefits of the laborers are very much below the European standards, the existence of rigid regulations in a market can produce similar results, particularly if the common practice includes avoiding the observance of the rules. The latter implies higher costs derived from risks of enforcement. The general practice of tax evasion, nonobservance of rules, and risks derived from the lack of enforcement, creates transaction costs and severe obstacles to competition. At last, the results in Argentina are similar to those of some richer European countries which maintain high rates of persistent unemployment.

This situation leads to a clear recommendation: more flexibilities are required in the labor market. But reforms in this sense have to be complemented with an effective strengthening of the legal framework and its enforcement capabilities. An effective improvement in that direction will imply changes both in demand and supply, and an improvement in the role of competition in the efficient allocation of resources.

4. Concluding Remarks

The results from blocks 2 and 3 and the impact simulation exercise give the following answers to the questions stated at the beginning of this paper.

(i) In the short run, Argentina should worry for decreases in Brazilian economic activity since demand for Argentine exports is more sensitive on this variable than on the terms of trade (prices). The market for exports of Argentina, in the short run, has a relatively elastic supply facing an inelastic demand with respect to price measured as terms of trade indexes. Income effects are stronger particularly in the Brazilian economy that by the time has a significant influence in the external trade of Argentina. This pattern of elasticities suggest strong competition from the domestic market.

(ii) Flexibility reforms in the labor market certainly do have important effects in absorbing unemployment. If the insider-outsider mechanism is removed it would increase employment in
an average of 115000 labourers in a situation similar to the existing in 1995. If reforms also remove the institutional cost to employers, the employment can be increased considerably. If the rate of institutional cost is 16.7% of the marginal product of labour, the increase in employment would have been over 850000 labourers on the average. If, on the other hand, the institutional cost rate were 33%, the absorption of unemployment would have reached 1.6 million labourers in a year like 1995. The removal of institutional costs expand the demand for labour. The model of the labour market for Argentina in the period 1990-1995 shows that unemployment moves in the sense that the International Monetary Fund considers the European unemployment as "structural". This type of unemployment derives from a variety of labour laws and norms that, on one hand, discourage employers from hiring more labourers, and on the other hand, encourage the use of the bargaining power of already employed to produce a division of the labour force into insiders and outsiders and making wages sticky downwards. The lack of flexibility in the norms prevent the process of competition to move into a better resource allocation. While in Europe there is an excess of social benefits increasing the cost of employing labour, in Argentina, the institutional set up produce the same results with much less social benefits for the working population.

(iii) The impact-simulation exercise shows that the decline in wages is not significant because the increase in the supply of labour is, to a great extent, offset by the expansion in demand created by the removal of the institutional cost. In the case without changes in demand for labour the declines in real wages vary between 2% and 2.7%; with the removal of an institutional cost of 16.7%, the reduction in real wages vary between 1.2% and 1.9%; with the removal of a cost of 33%, the real wage rate falls between 0.3% and 1%. As it follows from the model, the removal of the insider-outsider mechanism with the elimination of the institutional costs of hiring labour, should create immediate increases in employment, other things being equal, with a very small decline in wages. The absence of distortions expands both demand and supply in the labour market.

(iv) The significant increase in employment and the small declines in wages derived from a more flexible market benefits both labourers and employers. This result contrasts with the position of those who defend particular privileges in the name of the mass of employees. A more efficient economy with higher productivity an no institutional deadweight cost will make all market participants better off. The removal of institutional cost does not imply suppresions of all types of social benefits.

(v) The impact of the more flexible labour market will have long-run effects if the reforms in the labour market are complemented with changes in the judicial system directed to guarantee the enforcement of laws not interfering with economic efficiency. This is crucial if the institutional cost is expected to be eliminated.

In the course of the period under analysis effective demand expanded, so it happened with employment but the price mechanism was not working fully owing to the structural influence of laws and norms. This situation created involuntary unemployment that look like a voluntary disadjustment between demand and supply. The seriousness of the institutional constraint is clear in a context where no inflation can influence expectations. In a stable context, the particular behaviour producing persistent unemployment becomes immediately apparent.

Therefore, an increase in market flexibility should be the adequate response but the depth of the reform is essential for the removal of the negative effects of existing market distortions.

Notes:
1. The calculations were done by using the computer program PC-GIVE (Generalized Instrumental Variables Estimators), version 7, J.A., Doornik and D.F. Hendry (1992).

2. The set of equations of the original model shown in Appendix B includes present corrections on the consumption function. See block 1.

3. Amemiya (1966) developed an interpretation for 2SLS of Sargan's Limited Information Estimator for serial correlation of the residuals. Further mentions to Sargan's method refers to Amemiya's analogue. Amemiya and later Fair (1970) also developed methods of correction of serial correlation by reducing the large number of instruments required by Sargan's method. Fair also was interested in considering the case of lagged dependent variables.


5. When the second step regression includes a trend and a constant the following transformation must be made to compute the intercept and the trend coefficient in the corrected function. That is, \( a = (a' - rb)/(1-r) \) and \( b = b'/ (1-r) \) where \( a \) is the intercept and \( b \) the coefficient of the variable trend in the final equation; the primes refer to the coefficients of the second stage regression; and \( r \) is the estimate of rho.

6. The trend variable counts from the first quarter 1980 because the data base used in computing equations of all blocks of the model has been designed to include a bigger sample than that being used in the 1990-1995 research.

References
Appendix A

Data Sources

The data used in constructing the models cover the period 1990[1]-1995[4].


The real quarterly GDP index of Brazil without seasonality was obtained from The Brazilian Geographic and Economic Institute (IBGE).

The index of terms of trade was built by linking data was obtained from Reports of ECLA office in Buenos Aires for 1980-1991, and from "Carta Económica" for 1993-1995. The data for 1992 has been estimated.

Employment and unemployment figures are expressed in thousands of labourers. The source is National Board of Statistics (INDEC). These figures are published twice a year, that is, for April and October. The data was assigned to the second and third quarter. For the other quarters the figures were computed as the average between the previous and next quarter data.

The real wage rate index (1991=100) was kindly given by Fundación de Investigaciones Latinoamericanas (FIEL).

Appendix B

The complete model

The complete model consists of three simultaneous equation models, one depicting the macroeconomic relationships, the second reflects the macro export market, and the third describes the aggregate labour market.

Block 1:

B1.1) \( C_t = 0.36299 + 0.64566 Y_t + 0.18445 Y_{t-1} + 0.11277 \frac{M3}{p} \)

B1.2) \( I_t = -290.91 r_t + 0.47407 C_{t-1} - 545.08 \)

B1.3) \( M_t = 0.39754 Y_t + 0.42246 \text{tott} - 789.98 \)

B1.4) \( Y_t = C_t + I_t + X_t - M_t \)

B1.5) \( r_t = 5.403e-005 Y_t - 0.49142 r_{t-1} + 0.23366 qinf_t - 0.00019334 \left( \frac{M3}{p} \right) - 0.15928 \)
Block 2:

B2.1) $X_t = -1.0275 \ t o t_t + 5.5959 \ Y b r a_t - 506.01 + 4.62653 \ trend$

B2.2) $t o t_t = 0.1313 \ X_t - 0.6498(w/p)_t - 1 + 132.2062$

Block 3:

B3.1) $N_t = -50.869 \ (w/p)_t + 0.42931 \ Y_{t-1} - 44.278 \ t + 18283$

B3.2) $(w/p)_t = 0.0013723 \ N_t + 0.0074048 \ U_{t-1} + 0.53805 \ (w/p)_{t-1} - 0.91167 \ t + 66.781$

The following tables show the coefficients of each block derived reduced form.

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