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Globalisation and Unemployment: Panel Data Evidence from South American Republics

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Abstract

South American republics have taken substantial steps towards liberalising trade and capital flows since the late-1980s. Coincidentally, the unemployment rate in this region has increased during this period. This phenomenon has led many researchers to conclude that globalisation failed to deliver higher employment in these countries. This article examines whether this is true by focusing on a panel of nine South American republics. The evidence presented suggests that rising imports are behind some of the increment in the unemployment rate in these nations. However, other variables associated with globalisation (exports, FDI, and other capital inflows) are found to have an insignificant effect on the unemployment rate.

Key words: Unemployment, Trade Reform, Financial Reform, Latin America

1. Introduction

Globalisation, especially in the form of trade and financial liberalisation, gained influence as an employment-enhancing policy in the aftermath of the successful reform process in the so-called Asian Tigers (Hong Kong, Republic of Korea, Singapore, and Taiwan, China) and Cubs (Indonesia, Malaysia, and Thailand) in the mid-1950s and 1980s, respectively. In these nations trade liberalisation and high inflows of foreign direct investment (FDI) were followed by higher GDP growth and lower unemployment.

Following the 1982 debt moratorium and a series of economic crises during the 1980s, the latter of which were deemed related to the inefficiencies of import substitution industrialisation, the majority of Latin American nations were persuaded by international financial institutions, such as the World Bank and the International Monetary Fund, to embark upon a process of market friendly reforms. Due to the aforementioned success in East Asia, these reforms came to include, as a pivotal part of their structure, trade and financial liberalisation. Consequentially, by the early-1990s the majority of Latin American republics had taken decisive steps towards the liberalisation of both trade and capital flows (for a review of this process see Bulmer-Thomas, 1994 and Astorga et al., 2005).

Unfortunately, globalisation was not accompanied by lower unemployment in Latin America. In fact, some analysts have gone as far as placing the blame of the rise in unemployment in this region on policies related to globalisation. For instance, Amsden and van der Hoeven (1996) and Weeks (1999) conclude that reforms have failed in Latin America because employment has not seen a positive trend in the aftermath of liberalisation. Moreover

a recent study by Astorga et al. (2005) concludes that living standards rose most rapidly in Latin America between the 1930s and 1970s, a period characterised by increased state intervention and reduced trade openness.

There is now a large literature that aims to explain why globalisation has not accompanied improved labour market outcomes in Latin America. The vast majority of this literature focuses on trade reform and manufacturing wage inequality, possibly due to the fact that the observed effects in Latin America contradict the predictions of the Stolper-Samuelson theorem (Goldberg and Pavcnik, 2004). Of these studies only a minority discuss other labour market outcomes, such as employment (Winters et al., 2004).ⁱⁱ Employment has possibly received little attention in the literature because the neoclassical trade model assumes full employment and thus clear expectations about the relationship between openness and employment are difficult to justify. Nevertheless, this remains an important omission because a comprehensive study of the welfare consequences of globalisation on the poorer segments of society also needs a more comprehensive review of labour markets, which include changes in employment opportunities. This paper aims to contribute to this literature by focusing on the unemployment effects of globalisation.

In so doing, this study defines globalisation in terms of openness of both goods and capital markets. The opening of capital markets and the subsequent entrance of FDI into the economy should lead to employment generation. However, a simple analysis of whether a statistically significant relationship exists between employment and FDI, for instance, has not received considerable attention in the literature. In fact, only Hanson and Harrison (1995) address this issue for Mexico's manufacturing sector.

Overall, this paper aims to contribute to our understanding of the labour market consequences of globalisation by focusing solely on unemployment. The study focuses on a panel of Latin American nations in order to treat two key areas of globalisation— trade and capital liberalisation— together. The study focuses solely on a panel of South American republics due to data availability.

The paper is organised as follows. The following section discusses the data employed and reviews trends in these variables. Section 3 discusses the econometric model. Section 4 presents the results. Finally, Section 5 concludes the paper.

2. Data

This study uses annual data for the period 1975-2005 for nine South American countries. This period covers the time before and after trade and capital liberalisation, such that the data should be able to show whether unemployment has been affected by globalisation. The countries studied in the analysis are Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Uruguay, and Venezuela.

The dependent variable is the general rate of unemployment obtained from the International Labour Office (ILO), LABORSTA database. Unemployment is defined by the ILO as all persons above a specified age who during the reference period were not in paid employment or self-employment, were currently available for work, and seeking work. The statistics employed are presented as the ratio of the unemployed to the total of employed and unemployed persons in the group at the same date. The data are generally annual averages of monthly, quarterly or semi-annual data.

Table 1 presents a summary of the unemployment data for each of the nine countries reviewed in this article. Trade and financial liberalisation begun in these nations at around the late-1980s or early-1990s. Interestingly, since then the unemployment rate has increased in every country in this region with the exception of Bolivia and Chile. In fact, in Argentina, Colombia, and Uruguay the unemployment rate has increased by approximately six percentage points from the early-1990s to the five years following 2000. Whilst, the average rate of unemployment has increased by approximately four percentage points in this region

from the early-1990s to 2005. The remainder of this section presents the explanatory variables that make up globalisation.

Table 1: The Unemployment rate in South America

	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2005
Argentina	2.9	3.9	5.7	8.4	15.6	15.1
Bolivia	n.a.	n.a.	10.0	5.6	4.8	8.2
Brazil	2.3	4.4	3.2	5.5	7.9	9.3
Chile	13.4	14.0	8.1	5.2	6.3	7.7
Colombia	9.5	10.1	11.4	8.9	13.6	15.1
Ecuador	5.6	n.a.	7.4	7.2	10.4	9.6
Peru	n.a.	n.a.	5.2	7.9	7.1	10.5
Uruguay	n.a.	n.a.	9.1	8.8	11.0	15.0
Venezuela	5.5	8.5	10.1	8.6	11.9	14.3
Average	6.5	8.2	7.8	7.3	9.8	11.6

Note: Unemployment rate is measured as the share of total unemployment in the labour force.

Source: International Labour Office, LABORSTA.

In order to capture the effect of globalisation, the paper employs four commonly accepted variables. First, to control for trade liberalisation it uses the ratio of exports of goods and services to GDP and the ratio of imports of goods and services to GDP. This data is readily available from the World Bank, World Development Indicators (WDI) database. Exports and imports of goods and services represent the value of all goods and other market services provided to and received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude labour and property income, as well as transfer payments. Data are normalised with the GDP level of each country to ensure a better level of comparability. These data are employed instead of the more common measure of trade (exports plus imports) over GDP because exports and imports could have potentially offsetting effects on unemployment. Moreover, these two measures are preferred over data on tariffs and non-tariff barriers as well as policy-change dummies because of better data availability and because globalisation is better measured by outcomes than policy variables (Rodriguez and Rodrik, 2001).ⁱⁱⁱ

Second, in order to capture the effect of financial liberalisation this paper employs data on foreign direct investment (FDI) from Lane and Miseli-Ferreti (2006). This database looks at external assets and liabilities- the so-called International Investment Position, which encompasses various determinants of capital account openness. In particular it employs portfolio equity holdings (ownership of shares of companies and mutual funds that are below the 10 percent threshold), FDI, debt (this includes portfolio debt securities, plus bank loans and deposits and other debt instruments), financial derivatives (this corresponds to the market value of the outstanding derivatives' contracts), and official reserves (these include foreign exchange, SDR holdings, and the reserve position in the IMF). Following the recommendations of Athukorala and Rajapatirana (2003) the data is disaggregated between FDI and other capital flows. This is because FDI accrues mostly to export oriented industries, which could potentially lead to higher employment. Whilst other capital inflows are expected to result in real exchange rate appreciations, which hurt exports and encourage imports and thus may affect employment negatively. Again the data are normalised with the GDP level of each country to ensure a better level of comparability. Finally, the log of real GDP measured in 2000 US dollars is employed to control for the level of income. This data also comes from the World Bank, WDI. Table 2 presents summary statistics.

Table 2: Summary Statistics

Variable	Mean	SD	Max	Min	N
Unemployment rate	8.9	3.9	20.5	1.8	217
X/GDP	17.4	8.9	39.5	3.2	279
M/GDP	17.4	9.3	42.6	2.6	279
FDI/GDP	14.5	13.5	79.7	1.5	270
KA/GDP	46.7	24.9	126.9	-8.5	270
GDP (billion)	111.4	150.4	670.5	5.1	279

Source: ILO, LABORSTA; World Bank, WDI; and Lane and Miseli-Ferreti (2006).

Note: With the exception of GDP, variables are expressed in percentage terms.

GDP is expressed in billions of US\$ with 2000 as the base year.

A review of these data indicates that trade liberalisation in these nine South American nations has been accompanied by a rise in the share of exports and imports in GDP. Tables 3 and 4, for instance, indicate that from the 1980s to the 1990s exports and imports increased in every nation in this study. The tables highlight that on average exports and imports increased by approximately 24 and 22 percent from the mid-1980s to the early-1990s, respectively.

Table 3: Exports over GDP in South America (%)

	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2005
Argentina	4.7	5.3	6.3	7.4	9.8	12.7
Bolivia	15.1	13.5	13.1	17.6	18.7	21.7
Brazil	3.6	5.4	6.6	8.2	9.0	13.3
Chile	16.5	19.3	21.6	25.2	28.5	33.4
Colombia	11.5	10.8	13.3	16.9	18.3	21.3
Ecuador	18.7	17.6	21.7	29.6	35.5	36.1
Peru	9.3	10.1	9.0	11.6	13.5	18.1
Uruguay	9.8	11.5	13.3	15.9	18.4	19.8
Venezuela	33.8	26.3	27.9	32.3	33.2	28.1
Average	13.7	13.3	14.7	18.3	20.5	22.7

Source: World Bank, WDI.

Table 4: Imports over GDP in South America (%)

	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2005
Argentina	3.5	4.8	3.6	7.0	11.0	9.1
Bolivia	21.8	15.7	21.8	24.6	27.5	27.8
Brazil	9.1	6.6	5.5	7.5	12.4	11.4
Chile	17.1	20.8	16.6	21.7	28.9	32.7
Colombia	11.6	14.1	11.4	16.6	23.3	21.8
Ecuador	39.8	36.7	29.9	30.4	33.3	38.1
Peru	13.8	13.6	10.5	15.0	20.1	18.7
Uruguay	10.3	10.9	10.4	14.8	20.0	18.9
Venezuela	13.0	12.0	10.8	11.0	14.6	18.5
Average	15.6	15.0	13.4	16.5	21.2	21.9

Source: World Bank, WDI.

Similarly, financial liberalisation seems to have resulted in a rise in the share of FDI in GDP in all the nations studied here. In fact, following Table 5, the average nation has seen this ratio increase by approximately 70 percent from the late-1990s to the early-2000s. Nevertheless, the evidence for other capital flows is mixed with only Argentina, Brazil, Colombia, and Uruguay experiencing a rise in this ratio. Table 6 indicates that in the remaining republics this rate has actually decreased from the late-1990s to the early-2000s. The decline in those nations seems to be driven by a fall in the debt to GDP ratio from around the mid-1980s (Lane and Miseli-Ferreti, 2006)^{iv}.

Table 5: FDI over GDP in South America (%)

	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2004
Argentina	2.9	3.5	6.7	7.8	14.1	23.9
Bolivia	7.6	14.7	8.5	9.6	32.8	73.1
Brazil	8.4	8.7	3.4	3.6	4.6	13.2
Chile	26.7	19.8	20.6	25.3	36.6	49.6
Colombia	5.0	4.6	7.5	9.0	12.5	16.8
Ecuador	14.7	9.9	10.2	14.9	23.6	40.9
Peru	7.7	5.8	4.0	5.2	20.9	30.2
Uruguay	5.6	8.7	8.8	8.7	9.9	15.4
Venezuela	6.7	4.3	2.9	5.3	15.1	24.7
Average	9.5	8.9	8.1	9.9	18.9	32.0

Source: Lane and Miseli-Ferreti (2006)

Table 6: Other Capital Inflows (KA) over GDP in South America (%)

	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2004
Argentina	14.3	30.2	43.5	24.9	32.4	47.8
Bolivia	60.3	89.0	102.7	67.4	64.9	50.9
Brazil	41.6	55.1	34.2	28.8	36.0	52.8
Chile	37.1	58.2	78.7	52.4	38.9	32.0
Colombia	21.6	29.4	32.2	29.1	34.5	41.1
Ecuador	41.2	65.2	108.1	107.6	79.1	64.9
Peru	56.0	48.8	63.9	75.0	70.2	60.5
Uruguay	22.8	30.3	42.1	21.3	24.2	28.6
Venezuela	22.5	34.5	36.5	32.3	25.2	7.1
Average	35.3	48.9	60.2	48.8	45.0	42.9

Source: Lane and Miseli-Ferreti (2006)

3. The Model

The empirical model in this paper involves estimating an unemployment equation derived in the context of trade and financial globalisation. Essentially, the model tests whether exports, imports, FDI, and other capital inflows have had a significantly positive effect on unemployment in the nine aforementioned South American republics.

The influence of economic reform in the context of globalisation on unemployment in South America can be analysed using the following equation:

$$U_{it} = \delta + \beta_1 X_{i,t-1} + \beta_2 M_{i,t-1} + \beta_3 FDI_{i,t-1} + \beta_4 KA_{i,t-1} + \beta_5 y_{i,t-1} + \alpha_i + \gamma_{t-1} + \varepsilon_{it}. \quad (1)$$

Where U_{it} is the log of the ratio of unemployed workers in the total labour force, $X_{i,t-1}$ and $M_{i,t-1}$ are the log of the ratio of exports and imports to GDP with a one year lag, respectively. $FDI_{i,t-1}$ and $KA_{i,t-1}$ are the log of the ratio of FDI and other capital inflows to GDP with a one year lag, respectively. $y_{i,t-1}$ is the log of GDP with a one year lag. α_i denotes a country fixed effect and γ_{t-1} is a year fixed effect. Finally, ε_{it} is the idiosyncratic error term. Country fixed effects are country specific dummy variables that control for omitted characteristics that are constant for each nation, but vary across countries— such as whether the country is landlocked or in a mountainous region, which can have significant implications for the poor. Year fixed effects are year specific dummy variables that control for time shocks that affect every nation in a particular year, such as a financial crisis or region-wide policy shifts.

Unemployment reacts slowly to changes in the rest of the economy, therefore a lag of the explanatory variables is employed. This procedure also means that any problems associated with endogeneity of the explanatory variables will not be an issue. The implicit assumption here is that the correlation between the lagged explanatory variables and unemployment is lower than the correlation between its contemporary values. To test whether globalisation is indeed responsible for the general jump in the unemployment rate in these nations the statistical significance of β_1 , β_2 , β_3 , and β_4 are examined.

Note that following the recommendations of Bertrand et al. (2004), this paper computes standard errors using a generalised Huber-White formula clustered by country. This allows for arbitrary error correlations among country-year observations, which specifies standard errors that are asymptotically robust to serial correlation. This procedure is implemented in a straightforward manner by using the cluster command in STATA and choosing countries as clusters. Additionally, heteroscedasticity-robust standard errors are computed in order to provide t -statistics that are asymptotically t distributed. The results are provided and discussed in the following section.

4. Results

Table 7 presents the analysis of the relationship between the rate of unemployment and globalisation. Column 1 estimates equation (1), Column 2 drops the insignificant variables from the regression. Columns 3 and 4 replace the log of GDP with GDP growth for comparative reasons. Here it is evident that the only way by which globalisation has significantly affected unemployment is through the share of imports in GDP. Columns 1 and 2 indicate that for a constant level of income (GDP), exports, FDI, and other capital inflows, an increase in the share of imports in GDP by one percent will result in a rise in the unemployment rate by 0.5 percent in the following year. Similarly, columns 3 and 4 suggest that after controlling for growth, imports significantly increase unemployment. Interestingly, this suggests that over this period imports into these nations were displacing workers of traditional industries. This is not surprising if this is understood within the context of a transition from import substitution to export oriented industrialisation. Here, traditionally protected industries shrunk due to competition from more efficient industries in competitor countries.

Exports are found to have a positive and insignificant effect on the unemployment rate of these nine South American republics. This result is somewhat surprising given that trade liberalisation should have promoted labour-intensive industries in these developing countries, thus leading to increased employment opportunities. Rather, these results reflect the fact that trade reforms have been rather half-hearted in many of these nations. Rozenwurcel

(2006) shows that in Latin America the process of globalisation has been impeded by governments' failure to undertake reforms complementary to globalisation, such as fiscal and monetary stability. Since this framework discourages export-expansion, then exports would be no-longer expected to have a positive effect on employment. This may be exacerbated by the fact that, unlike East Asia, Latin America has failed to put export-promoting policies, such as subsidies and credit allocation, in place (Kay, 2002 and Narula, 2002). Thus exporters in this region have not faced the appropriate (or added) incentives necessary to embark on export-oriented industrialisation. Finally, this result may also occur due to some labour market rigidities, which serve to discourage employment in the export-oriented sectors of the economy. In fact these rigidities have been extensively documented in the literature (see Heckman and Pages, 2000 and Forteza and Rama, 2006).

Table 7: Globalisation and Unemployment

	Dep var: Unemployment rate			
	[1]	[2]	[3]	[4]
Log (X/GDP)	0.286 [0.245]		0.286 [0.245]	
Log (M/GDP)	0.538** [0.190]	0.530** [0.221]	0.538** [0.190]	0.530** [0.221]
Log (FDI/GDP)	-0.023 [0.068]		-0.023 [0.068]	
Log (KA/GDP)	-0.069 [0.093]		-0.069 [0.093]	
Log (GDP)	-1.906*** [0.190]	-1.844*** [0.177]		
GDP growth			-0.025*** [-4.01]	-0.019*** [-4.01]
Country and year FE?	Yes	Yes	Yes	Yes
Observations	212	212	212	212
R-squared	0.7	0.69	0.7	0.68

Notes: Robust Standard Errors, clustered at the country level, in brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, respectively

Independent variables are lagged by one year.

Dependent variable is unemployment divided by the total labour force.

Similarly to exports, the share of FDI and other capital inflows in GDP have an insignificant effect on the rate of unemployment. The negative and insignificant effect found for the ratio of FDI to GDP somewhat contradicts evidence from previous studies which have found that FDI discourages employment in Latin America by gearing the economy towards more capital-intensive methods of production (see Avalos and Savvides, 2003 and Behrman et al., 2000). The insignificant effect of FDI and other capital inflows also probably reflects half-hearted policy changes in South America with respect to capital account liberalisation (see Aizenman, 2005).

Finally, note that the log of real GDP and GDP growth are found to have a significantly negative effect on unemployment, *ceteris paribus*. Both Columns 1 and 2 highlight that an increase in GDP in the previous year by 1 percent will result in a fall in the unemployment rate by approximately 2 percent. Similarly, an increase in the growth rate of GDP by 10 percentage points will result in a decrease in unemployment by approximately 2

percent. In other words, income growth encourages employment. This suggests that policies that free-up resources and generate higher growth will also lead to higher employment.

Note that it is possible that the full effects of imports, exports and foreign direct investment on unemployment work through growth in secondary channels. For instance, it is possible non-labour intensive exports triggers growth in labour intensive sectors through secondary channels, which may not be directly captured here. One way to address this issue is to omit the log of GDP and GDP growth from the equations. However, by doing so one generates an omitted variable bias in the model, which would render the results potentially unreliable. Nevertheless, a simple regression without GDP found no significant change in the aforementioned coefficient estimates.

Given the substantial amount of evidence suggesting that labour markets in Latin America are inflexible it is important to test whether these findings are robust to a more long run analysis. Table 8 presents the results of equation (1) with lags of one, two, and five years. Additionally, the table presents a regression analysis that uses five year averages in order to omit any results driven by the business cycle.

Table 8: Globalisation and Unemployment in the Long Run

	Dep var: Unemployment rate					
	[1] 2 year	[2] 2 year	[3] 5 year	[4] 5 year	[5] 5 yr avg	[6] 5 yr avg
Log (X/GDP)	0.114 [0.227]		0.104 [0.311]		0.12 [0.781]	
Log (M/GDP)	0.690*** [0.157]	0.683*** [0.180]	0.277** [0.114]	0.273** [0.112]	0.988* [0.494]	0.975** [0.382]
Log (FDI/GDP)	0.004 [0.077]		0.034 [0.163]		-0.01 [0.119]	
Log (KA/GDP)	-0.12 [0.133]		-0.116 [0.181]		-0.069 [0.136]	
Log (GDP)	-1.874*** [0.217]	-1.794*** [0.156]	-1.490*** [0.370]	-1.422*** [0.367]	-2.118*** [0.236]	-1.917*** [0.155]
Country and year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	206	206	190	190	40	41
R-squared	0.71	0.71	0.56	0.55	0.85	0.83

Notes: Robust Standard Errors, clustered at the country level, in brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1%, respectively

2 and 5 year refer to the number of lags by which the independent variables are subjected.

Columns 5 and 6 present the estimates of a 5-year average regression.

Dependent variable is unemployment divided by the total labour force.

Interestingly, the results of Table 8 are similar to those of Table 7. Again it is highlighted that only the ratio of imports to GDP has a significant effect on the unemployment rate. Columns 1 and 2 indicate that after two years an increase in the share of imports in GDP by 1 percent will result in a rise in the rate of unemployment by 0.7 percent. Similarly, Columns 3 and 4 indicate that after three years this effect declines to cause an increase in the unemployment rate of 0.3 percent. The analysis using five year averages in Columns 5 and 6 indicates that an increase in the share of imports in GDP by 1 percent will result in an equal rise in the unemployment rate in these South American republics. Note also that a rise in GDP of 1 percent is found to approximately lead to a reduction in the unemployment rate by approximately 2 percent in all the regression estimates. Finally, note that the remaining coefficient estimates remain significant in the long run.

At first glance, the policy implications put forth by these results are more consistent with those of authors who take a somewhat apprehensive stance towards globalisation. That is, the expansion of imports as a share of GDP seems to be having an overall negative effect on employment in these nations, therefore imports should be curtailed. However it is not recommended here for Latin America to embark upon a policy of import protection. This is because import expansion has successfully freed-up resources (labour), which will be available for use once other reforms and policies allow for export-oriented development to take-off in these countries. These other reforms and policies have been noted to be macroeconomic stability, labour market deregulation, and export promotion. It is suggested here that the inability of exports (over GDP) to explain changes in unemployment in these nations most probably reflects the fact that these complementary reforms still need to take place.

5. Conclusion

Previous studies on trade reform on Latin America have suggested that trade openness has a positive effect on unemployment. Additionally, other authors have maintained that globalisation, in the form of higher financial integration, lies behind lower employment in this region. This paper has analysed the extent to which globalisation is responsible for higher unemployment in nine South American republics by decomposing the different parts of good and financial openness into exports, imports, FDI, and other capital inflows.

The results presented in this paper support the view that trade policy has a small, yet significantly positive, effect on unemployment. However, the decomposition of trade openness into exports and imports (over GDP) indicates that it is the latter that has been significantly driving unemployment in the nine South American republics studied in this paper. Moreover, the long run specifications employed show that this effect is still positive and significant two and five years after the initial surge in imports. It is argued that this is not surprising if this is understood within the context of a transition from import substitution to export oriented industrialisation; where traditionally protected industries shrunk due to competition from more efficient industries in competitor countries.

The policy implications obtained from these results may at first seem more consistent with those of authors who take an apprehensive stance towards globalisation. Essentially, it seems that freely allowing the entrance of imports into the economy is going to have detrimental long run consequences for employment. However, the fact that exports are unable to explain changes in unemployment suggests that the reform process has been rather half-hearted in these nations. Therefore, imports should not be protected against. Instead, further reform is necessary in order to allow export-oriented industries to successfully use the labour that has already been freed-up by the penetration of imports.

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ⁱⁱ One of the few cross-country studies on trade liberalisation and employment is Marquez and Pages-

Serra (1998).

ⁱⁱⁱ A regression using the commonly employed Sachs and Warner (1995) openness dummy variable was used as an additional robustness exercise. The results, available upon request, confirm the findings in the Results section of this paper.

^{iv} The debt to GDP ratio has followed a downward trend from the mid-1980s in the nine South American nations studied here. However, Argentina, Brazil, and Colombia saw this ratio increase from around the mid-1990s. In fact, Argentina reached an all-time high in 2002.