



Research article

Unemployment invariance hypothesis and labor supply: A test for 31 American countries

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Supplementary

Appendix A

Table A.1. Unit root tests (1991|1992: 2019).

Country	LFP						UR					
	Levels			Differences			Levels			Differences		
	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS
Argentina	-3.25	-3.25	0.15**	-4.43***	-4.39***	0.18	-2.71	-2.72	0.14*	-3.93***	-3.94***	0.19
Bahamas	-5.48***	-6.31***	0.25***	-3.20***	-3.23***	0.75***	-1.96	-2.05	0.13*	-5.91***	-5.86***	0.08
Barbados	-1.24	-0.69	0.26***	-5.75***	-5.76***	0.48	-1.32	-1.46	0.21**	-3.16***	-3.17***	0.22
Belize	-0.91	-1.05	0.17**	-2.62**	-2.58**	0.29	-2.3	-2.39	0.09	-3.90***	-3.91***	0.1
Bolivia	-3.31	-3.26	0.11	-6.60***	-6.99***	0.07	-1.55	-1.63	0.14*	-4.98***	-4.99***	0.2
Brazil	-1.59	-1.75	0.17**	-5.14***	-5.14***	0.11	-1.37	-1.76	0.12*	-3.55***	-3.58***	0.1
Canada	-1.13	-1.6	0.19**	-3.64***	-3.62***	0.15	-1.78	-1.84	0.18**	-4.10***	-4.10***	0.08
Chile	-1.47	-2	0.1	-3.54***	-3.49***	0.12	-1.83	-1.75	0.22***	-6.18***	-6.18***	0.2
Colombia	-1.68	-2.1	0.07	-3.98***	-3.97***	0.13	-1.7	-1.87	0.15**	-3.99***	-3.97***	0.1
Costa Rica	-3.23	-3.1	0.08	-5.04***	-5.03***	0.04	-3.1	-3.17	0.07	-5.20***	-5.20***	0.13
Cuba	-3.84	-3.76	0.16**	-4.91***	-4.92***	0.29	-0.82	-1.29	0.22***	-2.21**	-2.23**	0.17
Ecuador	-1.83	-2.18	0.08	-3.83***	-3.84***	0.06	-2.86	-2.78	0.08	-4.65***	-4.62***	0.05
El Salvador	-4.21***	-4.17***	0.09	-5.42***	-5.56***	0.06	-4.19***	-4.20***	0.09	-7.48***	-7.70***	0.08
United States	-2.23	-2.21	0.20**	-2.58**	-2.56**	0.27	-1.19	-1.72	0.11	-3.00***	-3.11***	0.1
Guatemala	-4.15***	-4.07***	0.15**	-7.60***	-8.40***	0.15	-0.89	-0.75	0.20**	-4.62***	-4.59***	0.28
Guyana	-1.5	-1.3	0.08	0.41	0.52	0.32	-1.16	-1.39	0.23***	-1.87*	-1.94*	0.34

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Country	LFP						UR					
	Levels			Differences			Levels			Differences		
	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS	ADF	PP	KPSS
Haiti	-2.74	-2.23	0.22***	-1.55	-1.59	0.48	-0.45	-1.23	0.18**	-1.85*	-1.90*	0.19
Honduras	-1.28	-1.15	0.21**	-4.44***	-4.35***	0.2	-2.99	-3.13	0.08	-5.72***	-5.75***	0.08
Jamaica	0.27	-0.06	0.20**	-3.54***	-3.63***	0.4	0.33	-0.95	0.08	-2.73***	-2.69***	0.24
Mexico	-2.45	-2.66	0.06	-3.70***	-3.63***	0.07	-2.12	-2.32	0.08	-4.33***	-4.31***	0.08
Nicaragua	0.33	-1.24	0.15**	-0.83	-0.98	0.23	-2.43	-2.56	0.05	-3.95***	-3.92***	0.05
Panama	-3.89	-3.97***	0.12*	-4.15***	-4.08***	0.14	-1.04	-1.46	0.1	-4.05***	-4.08***	0.17
Paraguay	-3.27	-3.08	0.14*	-6.00***	-6.54***	0.15	-3.59	-3.64	0.11	-8.42***	-9.10***	0.08
Peru	-0.54	-0.65	0.23***	-3.54***	-3.55***	0.36	-2.76	-2.72	0.13*	-5.96***	-6.18***	0.1
Dominican Republic	-0.24	0.18	0.23***	-4.51***	-4.52***	0.43	-2.35	-2.5	0.08	-5.47***	-5.47***	0.07
Saint Vicent and the Grenadines	-0.75	-0.91	0.24***	-2.80***	-2.69***	0.46	-1.83	-2.12	0.1	-3.39***	-3.47***	0.08
Saint Lucia	-1.9	-1.95	0.22***	-3.14***	-3.13***	0.15	-1.9	-2.17	0.06	-3.33***	-3.31***	0.09
Suriname	-3.02	-2.51	0.22***	-1.34	-1.28	0.47	-2.68	-2.62	0.09	-4.58***	-4.58***	0.16
Trinidad and Tobago	-0.37	-0.45	0.25***	-3.39***	-3.42***	0.5	0.13	0.12	0.23***	-3.26***	-3.28***	0.35
Uruguay	-1.62	-1.86	0.09	-4.69***	-4.70***	0.13	-1.51	-1.79	0.16**	-3.10***	-3.13***	0.12
Venezuela	4.3	4.56	0.23***	1.53	2.4	0.6	-1.55	-1.71	0.17**	-3.76***	-3.73***	0.13

Note: ADF and PP tests are based on the critical values of Mackinnon (1994). The KPSS test is based on the critical values of KPSS. Null Hypothesis (H₀): In the case of the ADF and PP tests, the null hypothesis states that the series contains a unit root, whereas for the KPSS test, the null hypothesis assumes stationarity. *, ** and *** indicate that the null hypothesis is rejected at 10%, 5% and 1% levels, respectively. Figures without * indicate that the null hypothesis is accepted, at least at 1%, 5% or 10% levels. The ADF, PP, and KPSS tests were estimated at levels, incorporating both a constant and a trend. In contrast, in their differenced versions, the ADF and PP tests were conducted without including either a constant or a trend, while the KPSS test included at least one constant.

Table A.2. Unit root tests (1991|1992: 2023).

País	LFP				UR											
	Levels		First differences		Levels				First differences							
	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Argentina	-4.34***	-4.28***	0.11	-4.72	-8.56***	-9.52***	0.13	-8.77***	-2.84	-2.86	0.11	-4.25	-4.24***	-4.19***	0.21	-5.07**
Bahamas	-3.03	-2.92	0.21**	-4.02	-6.53***	-6.92***	0.24	-5.91***	-2.13	-2.2	0.1	-4.52	-6.23***	-6.21***	0.08	-7.03***
Barbados	-1.87	-1.72	0.23***	-4.48	-5.90***	-5.90***	0.33	-6.72***	-1.53	-1.65	0.18**	-4.92	-3.43***	-3.43***	0.21	-4.52
Belize	-1.67	-1.76	0.17**	-2.87	-3.89***	-3.86***	0.2	-4.65*	-2.22	-2.44	0.1	-4.22	-4.15***	-4.09***	0.09	-6.57***
Bolivia	-3.62	-3.52	0.11	-5.07	-6.69***	-7.60***	0.08	-6.05***	-3.28	-3.19	0.14*	-3.74	-6.67***	-7.15***	0.07	-6.10***
Brazil	-2.47	-2.41	0.18**	-4.36	-7.17***	-7.51***	0.14	-7.34***	-1.49	-1.88	0.08	-3.13	-3.85***	-3.77***	0.12	-4.13
Canada	-1.4	-1.57	0.19**	-5.03	-6.29***	-6.25***	0.13	-7.05***	-2.87	-2.73	0.16**	-4.44	-5.78***	-6.03***	0.08	-5.52***
Chile	-2.25	-2.46	0.07	-3.66	-4.23***	-4.14***	0.07	-4.37	-2.26	-2.19	0.15*	-3.75	-6.87***	-6.89***	0.12	-7.53***
Colombia	-1.87	-2.17	0.08	-4.75	-4.87***	-4.92***	0.13	-6.77***	-2.01	-2.15	0.1	-4.07	-4.56***	-4.48***	0.09	-5.44***
Costa Rica	-2.38	-2.22	0.17**	-4.45	-5.84***	-5.90***	0.25	-6.05***	-2.79	-2.83	0.1	-4.81	-4.13***	-4.00***	0.06	-4.45
Cuba	-2.84	-2.88	0.12*	-3.94	-5.65***	-5.77***	0.1	-5.49***	-0.78	-1.25	0.19**	-4.57	-2.58**	-2.64**	0.17	-4.19
Ecuador	-2.98	-3.05	0.06	-3.99	-6.50***	-6.56***	0.05	-6.52***	-3.37	-3.23	0.09	-5.09	-5.74***	-6.15***	0.07	-6.44***
El Salvador	-4.64***	-4.52***	0.09	-5.16	-7.36***	-8.73***	0.09	-5.92***	-4.18***	-4.19***	0.07	-5.62***	-7.38***	-7.67***	0.12	-7.90***
United States	-2.48	-2.49	0.17**	-2.74	-4.08***	-4.10***	0.22	-4.86**	-2.15	-2.27	0.1	-4.04	-5.19***	-5.18***	0.08	-5.91***
Guatemala	-4.02***	-3.92	0.14*	-4.57	-7.41***	-8.36***	0.08	-4.75*	-3.35	-3.43	0.15**	-2.91	-10.09***	-10.41***	0.08	-11.51***
Guyana	-2.25	-2.42	0.13*	-3.08	-4.29***	-4.31***	0.11	-4.76*	-2.19	-2.2	0.17**	-2.8	-5.42***	-5.45***	0.11	-6.11***
Haiti	-2.55	-2.31	0.15**	-2.96	-2.71***	-2.63**	0.31	-5.22**	-0.62	-1.3	0.16**	-3.5	-2.49**	-2.49**	0.15	-4.78*
Honduras	-1.99	-1.88	0.17**	-3.24	-5.13***	-5.23***	0.13	-7.07***	-3.78	-3.75	0.12*	-4.95	-6.95***	-7.46***	0.08	-5.06**
Jamaica	-0.43	-0.4	0.21**	-6.25***	-5.66***	-5.77***	0.43	-4	-0.83	-1.01	0.14*	-4.2	-4.45***	-4.39***	0.25	-4.28
Mexico	-4.05***	-4.00***	0.09	-4.57	-7.61***	-8.26***	0.07	-7.48***	-2.24	-2.43	0.07	-4.19	-4.59***	-4.53***	0.1	-4.71*
Nicaragua	-0.59	-1.14	0.18**	-5.49	-2.04**	-1.98**	0.17	-4.66*	-2.55	-2.75	0.05	-5.02	-4.25***	-4.17***	0.04	-4.42

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País	LFP								UR							
	Levels				First differences				Levels				First differences			
	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Panama	-4.08***	-4.08***	0.17**	-4.85	-6.30***	-7.01***	0.28	-6.35***	-2.69	-2.69	0.13*	-4	-5.95***	-6.12***	0.07	-5.14**
Paraguay	-4.03***	-3.97***	0.16**	-5.51	-7.11***	-9.10***	0.09	-7.28***	-3.61	-3.66	0.1	-5.42	-8.74***	-9.54***	0.07	-9.08***
Peru	-0.91	-0.59	0.22***	-4.72	-5.77***	-5.76***	0.44	-5.41***	-3.51	-3.53	0.14*	-3.37	-7.48***	-9.04***	0.13	-7.50***
Dominican Republic	-2.14	-1.99	0.19**	-4.5	-7.44***	-7.53***	0.18	-8.45***	-3.14	-3.21	0.07	-4.08	-7.44***	-7.50***	0.06	-8.03***
Saint Vicent and the Grenadines	-2.7	-2.62	0.19**	-3.71	-5.40***	-5.49***	0.1	-5.47***	-2.12	-2.36	0.07	-4.54	-3.54***	-3.43***	0.08	-3.96
Saint Lucia	-2.09	-2.06	0.1	-2.97	-5.27***	-5.22***	0.17	-8.01***	-2.38	-2.35	0.06	-2.89	-5.38***	-5.36***	0.16	-4.74*
Suriname	-1.53	-1.83	0.12	-2.32	-4.89***	-4.99***	0.16	-6.44***	-2.71	-2.66	0.14*	-3.11	-4.95***	-4.96***	0.18	-5.82***
Trinidad and Tobago	-1.01	-1.06	0.23***	-3.98	-3.50***	-3.50***	0.49	-4.42	0.31	0.3	0.23***	-5.23	-3.50***	-3.64***	0.44	-6.74***
Uruguay	-1.76	-1.86	0.14*	-3.81	-5.64***	-5.64***	0.13	-6.41***	-1.63	-1.92	0.11	-3.77	-3.56***	-3.49***	0.1	-4.88**
Venezuela	-1.29	-1.5	0.20**	-4.16	-2.81***	-2.76***	0.2	-5.81***	-1.69	-1.88	0.12	-5.5	-4.08***	-4.03***	0.11	-5.25**

Note: ADF and PP tests are based on the critical values of Mackinnon (1994). The KPSS test is based on the critical values of KPSS. ZA = Zivot-Andrews test. Null Hypothesis (H₀): In the case of the ADF, ZA and PP tests, the null hypothesis states that the series contains a unit root, whereas for the KPSS test, the null hypothesis assumes stationarity. *, ** and *** indicate that the null hypothesis is rejected at 10%, 5% and 1% levels, respectively. Figures without * indicate that the null hypothesis is accepted, at least at 1%, 5% or 10% levels. The ADF, PP, ZA and KPSS tests were estimated at levels, incorporating both a constant and a trend. In contrast, in their differenced versions, the ADF and PP tests were conducted without including either a constant or a trend, while the KPSS and ZA test included at least one constant.

Appendix B

Table B.1. Cointegration test results.

Country	No. of cointegration relations	1991: 2019							1991: 2023						
		Lags VAR	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}		Lags VAR	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}	
			Trace statistic	M-H-M	O-L	Max statistic	M-H-M	O-L		Trace statistic	M-H-M	O-L	Max statistic	M-H-M	O-L
Argentina	$H_0: r=0$	5	8.83	15.50	15.41	6.45	14.27	14.07	5	33.17	15.50	15.41	30.12	14.27	14.07
	$H_0: r=1$		2.39	3.84	3.76	2.39	3.84	3.76		3.05*	3.84	3.76	3.05*	3.84	3.76
Bahamas	$H_0: r=0$	5	13.55	15.50	15.41	13.27	14.27	14.07	5	28.44	15.50	15.41	24.26	14.27	14.07
	$H_0: r=1$		0.28	3.84	3.76	0.28	3.84	3.76		4.18	3.84	3.76	4.18	3.84	3.76
Barbados	$H_0: r=0$	4	18.55	15.50	15.41	16.95	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		1.60*	3.84	3.76	1.60*	3.84	3.76		-	-	-	-	-	-
Belize	$H_0: r=0$	5	20.60	15.50	15.41	17.62	14.27	14.07	5	18.55	15.50	15.41	14.90	14.27	14.07
	$H_0: r=1$		2.98*	3.84	3.76	2.98*	3.84	3.76		3.64*	3.84	3.76	3.64*	3.84	3.76
Bolivia	$H_0: r=0$	4	16.75	15.50	15.41	11.01	14.27	14.07	4	43.71	15.50	15.41	40.11	14.27	14.07
	$H_0: r=1$		5.74	3.84	3.76	5.74	3.84	3.76		3.61*	3.84	3.76	3.61*	3.84	3.76
Brazil	$H_0: r=0$	3	30.06	15.50	15.41	22.74	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		7.32	3.84	3.76	7.32	3.84	3.76		-	-	-	-	-	-
Canada	$H_0: r=0$	5	21.49	15.50	15.41	20.85	14.27	14.07	5	37.63	15.50	15.41	36.66	14.27	14.07
	$H_0: r=1$		0.64*	3.84	3.76	0.64*	3.84	3.76		0.97*	3.84	3.76	0.97*	3.84	3.76
Chile	$H_0: r=0$	4	12.96	15.50	15.41	8.45	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		4.51	3.84	3.76	4.51	3.84	3.76		-	-	-	-	-	-

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Country	No. of cointegration relations	1991: 2019							1991: 2023						
		Lags	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}		Lags	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}	
		VAR		M-H-M	O-L	Max	M-H-M	O-L	VAR		M-H-M	O-L	Max	M-H-M	O-L
			Trace statistic			statistic				Trace statistic				statistic	
Colombia	$H_0: r=0$	2	8.73	15.50	15.41	5.47	14.27	14.07	2	12.76	15.50	15.41	10.34	14.27	14.07
	$H_0: r=1$		3.26	3.84	3.76	3.26	3.84	3.76		2.42	3.84	3.76	2.42	3.84	3.76
Costa Rica	$H_0: r=0$	2	16.55	15.50	15.41	15.83	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		0.70*	3.84	3.76	0.70*	3.84	3.76		-	-	-	-	-	-
Cuba	$H_0: r=0$	2	13.10	15.50	15.41	12.56	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		0.54	3.84	3.76	0.54	3.84	3.76		-	-	-	-	-	-
Ecuador	$H_0: r=0$	3	13.74	15.50	15.41	9.12	14.27	14.07	3	16.31	15.50	15.41	9.63	14.27	14.07
	$H_0: r=1$		4.62	3.84	3.76	4.63	3.84	3.76		6.68	3.84	3.76	6.68	3.84	3.76
United States	$H_0: r=0$	4	11.35	15.50	15.41	9.58	14.27	14.07	4	21.66	15.50	15.41	16.58	14.27	14.07
	$H_0: r=1$		1.77	3.84	3.76	1.77	3.84	3.76		5.08	3.84	3.76	5.08	3.84	3.76
Guatemala	$H_0: r=0$	6	16.60	15.50	15.41	15.99	14.27	14.07	6	7.86	15.50	15.41	7.39	14.27	14.07
	$H_0: r=1$		0.61*	3.84	3.76	0.61*	3.84	3.76		0.48	3.84	3.76	0.48	3.84	3.76
Guyana	$H_0: r=0$	4	10.25	15.50	15.41	10.11	14.27	14.07	4	17.19	15.50	15.41	17.03	14.27	14.07
	$H_0: r=1$		0.14	3.84	3.76	0.14	3.84	3.76		0.16*	3.84	3.76	0.16*	3.84	3.76
Haiti	$H_0: r=0$	2	15.34	15.50	15.41	10.71	14.27	14.07	2	39.98	15.50	15.41	32.64	14.27	14.07
	$H_0: r=1$		4.64	3.84	3.76	4.64	3.84	3.76		7.33	3.84	3.76	7.33	3.84	3.76
Honduras	$H_0: r=0$	5	8.65	15.50	15.41	5.12	14.27	14.07	5	20.00	15.50	15.41	16.47	14.27	14.07
	$H_0: r=1$		3.57	3.84	3.76	3.57	3.84	3.76		3.53*	3.84	3.76	3.53*	3.84	3.76
Jamaica	$H_0: r=0$	2	24.47	15.50	15.41	20.44	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		4.04	3.84	3.76	4.03	3.84	3.76		-	-	-	-	-	-

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Country	No. of cointegration relations	1991: 2019							1991: 2023						
		Lags	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}		Lags	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}	
		VAR		M-H-M	O-L	Max	M-H-M	O-L	VAR		M-H-M	O-L	Max	M-H-M	O-L
			Trace statistic			statistic				Trace statistic				statistic	
Mexico	$H_0: r=0$	5	35.05	15.50	15.41	33.76	14.27	14.07	5	43.42	15.50	15.41	36.48	14.27	14.07
	$H_0: r=1$		1.30*	3.84	3.76	1.30*	3.84	3.76		6.94	3.84	3.76	6.94	3.84	3.76
Nicaragua	$H_0: r=0$	3	20.96	15.50	15.41	14.53	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		6.43	3.84	3.76	6.43	3.84	3.76		-	-	-	-	-	-
Panama	$H_0: r=0$	3	12.46	15.50	15.41	8.11	14.27	14.07	3	35.89	15.50	15.41	33.64	14.27	14.07
	$H_0: r=1$		4.35	3.84	3.76	4.35	3.84	3.76		2.25*	3.84	3.76	2.25*	3.84	3.76
Paraguay	$H_0: r=0$	6	17.15	15.50	15.41	13.43	14.27	14.07	6	12.80	15.50	15.41	7.04	14.27	14.07
	$H_0: r=1$		3.72*	3.84	3.76	3.76	3.84	3.76		5.76	3.84	3.76	5.76	3.84	3.76
Peru	$H_0: r=0$	6	28.33	15.50	15.41	18.97	14.27	14.07	6	33.77	15.50	15.41	26.55	14.27	14.07
	$H_0: r=1$		9.36	3.84	3.76	9.36	3.84	3.76		7.21	3.84	3.76	7.21	3.84	3.76
Dominican Republic	$H_0: r=0$	2	8.98	15.50	15.41	7.59	14.27	14.07	2	10.84	15.50	15.41	6.54	14.27	14.07
	$H_0: r=1$		1.39	3.84	3.76	1.39	3.84	3.76		4.30	3.84	3.76	4.30	3.84	3.76
Saint Vincent and the Grenadines	$H_0: r=0$	1	18.83	15.50	15.41	15.66	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		3.17*	3.84	3.76	3.17*	3.84	3.76		-	-	-	-	-	-
Saint Lucia	$H_0: r=0$	5	10.59	15.50	15.41	10.56	14.27	14.07	5	19.17	15.50	15.41	17.43	14.27	14.07
	$H_0: r=1$		0.03	3.84	3.76	0.03	3.84	3.76		1.74*	3.84	3.76	1.74*	3.84	3.76
Suriname	$H_0: r=0$	5	40.27	15.50	15.41	31.02	14.27	14.07	5	24.18	15.50	15.41	21.23	14.27	14.07
	$H_0: r=1$		9.24	3.84	3.76	9.24	3.84	3.76		2.95*	3.84	3.76	2.95*	3.84	3.76

Continued on next page

Country	No. of cointegration relations	1991: 2019							1991: 2023						
		Lags	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}		Lags	J_{trace}	5% critical value J_{trace}		J_{max}	5% critical value J_{max}	
		VAR		M-H-M	O-L	Max	M-H-M	O-L	VAR		M-H-M	O-L	Max	M-H-M	O-L
			Trace statistic			statistic				Trace statistic	M			statistic	M
Trinidad and Tobago	$H_0: r=0$	4	17.18	15.50	15.41	15.19	14.27	14.07	-	-	-	-	-	-	-
	$H_0: r=1$		1.99*	3.84	3.76	1.99*	3.84	3.76							
Uruguay	$H_0: r=0$	3	19.25	15.50	15.41	15.99	14.27	14.07	3	20.79	15.50	15.41	17.85	14.27	14.07
	$H_0: r=1$		3.26*	3.84	3.76	3.26*	3.84	3.76		2.94*	3.84	3.76	2.94*	3.84	3.76
Venezuela	$H_0: r=0$	5	16.45	15.50	15.41	11.59	14.27	14.07	8	29.84	15.50	15.41	25.82	14.27	14.07
	$H_0: r=1$		4.86	3.84	3.76	4.86	3.84	3.76		4.02	3.84	3.76	4.02	3.84	3.76

Note: The * indicates that this estimator has selected the number of cointegrating equations corresponding to this row of the table.

J_{max} and J_{trace} are the test statistics from Johansen's maximum eigenvalue and trace tests respectively.

The lags in the VAR were selected based on statistics that minimize information criteria. LR: sequential modified LR test statistic, FPE: Final prediction error, AIC: Akaike, SC: Schwarz, HQ: Hannan-Quinn.

M-H-M= MacKinnon et al. (1999).

O-L= Osterwald-Lenum (1992).

Table B.2. Results regarding the unemployment invariance hypothesis and added or discouraged worker effects.

Country	Aggregated model (1991–2019)	Aggregated model (1991–2023)
Argentina	Accepted	Rejected
Effect	-	Added worker
Bahamas	Accepted	Accepted
Effect	-	-
Barbados	Rejected	n/a
Effect	Added worker	n/a
Belize	Rejected	Rejected
Effect	Discouraged worker	Discouraged worker
Bolivia	Accepted	Rejected
Effect	-	Discouraged worker
Brazil	Accepted	n/a
Effect	-	n/a
Canada	Rejected	Rejected
Effect	Discouraged worker	Discouraged worker
Chile	Accepted	n/a
Effect	-	n/a
Colombia	Accepted	Accepted
Effect	-	-
Costa Rica	Rejected	n/a
Effect	Added worker	n/a
Cuba	Accepted	n/a
Effect	-	n/a
Ecuador	Accepted	Accepted
Effect	-	-
United States	Accepted	Accepted
Effect	-	-
Guatemala	Rejected	Accepted
Effect	Discouraged worker	-
Guyana	Accepted	Rejected
Effect	-	Added worker
Haiti	Accepted	Accepted
Effect	-	-
Honduras	Accepted	Rejected
Effect	-	Added worker
Jamaica	Accepted	n/a
Effect	-	n/a
Mexico	Rejected	Accepted

Continued on next page

Country	Aggregated model (1991–2019)	Aggregated model (1991–2023)
Effect	Added worker	-
Nicaragua	Accepted	n/a
Effect	-	n/a
Panama	Accepted	Rejected
Effect	-	Discouraged worker
Paraguay	Accepted	Accepted
Effect	-	-
Peru	Accepted	Accepted
Effect	-	-
Dominican Republic	Accepted	Accepted
Effect	-	-
Saint Vincent and the Grenadines	Rejected	n/a
Effect	Discouraged worker	n/a
Saint Lucia	Accepted	Rejected
Effect	-	Discouraged worker
Suriname	Accepted	Rejected
Effect	-	Discouraged worker
Trinidad and Tobago	Rejected	n/a
Effect	Discouraged worker	n/a
Uruguay	Rejected	Rejected
Effect	Discouraged worker	Discouraged worker
Venezuela	Accepted	Accepted
Effect	-	-

Note: n/a = not available.

Table B.3. Cointegration vectors.

Country	Variable	Aggregated model (1991–2019)	Aggregated model (1991–2023)
Argentina	Labor force participation rate	n/c	1
	Unemployment rate	n/c	-0.20
	Standard error	n/c	(0.0393)
Bahamas	Labor force participation rate	n/c	n/a
	Unemployment rate	n/c	n/a
	Standard error	n/c	n/a
Barbados	Labor force participation rate	1	n/a
	Unemployment rate	-8.79	n/a
	Standard error	(2.1805)	n/a
Belize	Labor force participation rate	1	1
	Unemployment rate	1.11	1.01
	Standard error	(0.0989)	(0.1344)

Continued on next page

Country	Variable	Aggregated model (1991–2019)	Aggregated model (1991–2023)
Bolivia	Labor force participation rate	n/c	1
	Unemployment rate	n/c	3.58
	Standard error	n/c	(0.5476)
Brazil	Labor force participation rate	n/c	n/a
	Unemployment rate	n/c	n/a
	Standard error	n/c	n/a
Canada	Labor force participation rate	1	1
	Unemployment rate	0.05	0.04
	Standard error	(0.1303)	(0.1175)
Chile	Labor force participation rate	n/c	n/a
	Unemployment rate	n/c	n/a
	Standard error	n/c	n/a
Colombia	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
Costa Rica	Labor force participation rate	1	n/a
	Unemployment rate	-1.24	n/a
	Standard error	(0.2169)	n/a
Cuba	Labor force participation rate	n/c	n/a
	Unemployment rate	n/c	n/a
	Standard error	n/c	n/a
Ecuador	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
United States	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
Guatemala	Labor force participation rate	1	n/c
	Unemployment rate	6.64	n/c
	Standard error	(1.2363)	n/c
Guyana	Labor force participation rate	n/c	1
	Unemployment rate	n/c	-3.90
	Standard error	n/c	(1.1558)
Haiti	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
Honduras	Labor force participation rate	n/c	1
	Unemployment rate	n/c	-16.82
	Standard error	n/c	(4.6643)

Continued on next page

Country	Variable	Aggregated model (1991–2019)	Aggregated model (1991–2023)
Jamaica	Labor force participation rate	n/c	n/a
	Unemployment rate	n/c	n/a
	Standard error	n/c	n/a
Mexico	Labor force participation rate	1	n/c
	Unemployment rate	-1.36	n/c
	Standard error	(0.1887)	n/c
Nicaragua	Labor force participation rate	n/c	n/a
	Unemployment rate	n/c	n/a
	Standard error	n/c	n/a
Panama	Labor force participation rate	n/c	1
	Unemployment rate	n/c	5.55
	Standard error	n/c	(0.7724)
Paraguay	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
Peru	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
Dominican Republic	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c
Saint Vincent and the Grenadines	Labor force participation rate	1	n/a
	Unemployment rate	0.25	n/a
	Standard error	(0.2906)	n/a
Saint Lucia	Labor force participation rate	n/c	1
	Unemployment rate	n/c	3.05
	Standard error	n/c	(1.0639)
Suriname	Labor force participation rate	n/c	1
	Unemployment rate	n/c	1.75
	Standard error	n/c	(0.2004)
Trinidad and Tobago	Labor force participation rate	1	n/a
	Unemployment rate	0.40	n/a
	Standard error	(0.0774)	n/a
Uruguay	Labor force participation rate	1	1
	Unemployment rate	0.73	0.74
	Standard error	(0.1791)	(0.1691)
Venezuela	Labor force participation rate	n/c	n/c
	Unemployment rate	n/c	n/c
	Standard error	n/c	n/c

Note: n/a = not available, n/c= not cointegrated.

Table B.4. Likelihood ratio testing for restrictive conditions in cointegrated VAR models.

Country	Restriction	Aggregated model (1992–2019)	Aggregated model (1992–2023)
Argentina	$\beta=(1\ 0)'$	n/c	24.85***
	$\beta=(0\ 1)'$	n/c	10.73***
Bahamas	$\beta=(1\ 0)'$	n/c	n/a
	$\beta=(0\ 1)'$	n/c	n/a
Barbados	$\beta=(1\ 0)'$	0.05	n/a
	$\beta=(0\ 1)'$	14.99***	n/a
Belize	$\beta=(1\ 0)'$	14.64***	10.99***
	$\beta=(0\ 1)'$	13.61***	8.42***
Bolivia	$\beta=(1\ 0)'$	n/c	14.48***
	$\beta=(0\ 1)'$	n/c	29.84***
Brazil	$\beta=(1\ 0)'$	n/c	n/a
	$\beta=(0\ 1)'$	n/c	n/a
Canada	$\beta=(1\ 0)'$	15.67***	31.07***
	$\beta=(0\ 1)'$	0.16	0.17
Chile	$\beta=(1\ 0)'$	n/c	n/a
	$\beta=(0\ 1)'$	n/c	n/a
Colombia	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
Costa Rica	$\beta=(1\ 0)'$	14.76***	n/a
	$\beta=(0\ 1)'$	12.08***	n/a
Cuba	$\beta=(1\ 0)'$	n/c	n/a
	$\beta=(0\ 1)'$	n/c	n/a
Ecuador	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
United States	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
Guatemala	$\beta=(1\ 0)'$	1.60	n/c
	$\beta=(0\ 1)'$	7.31***	n/c
Guyana	$\beta=(1\ 0)'$	n/c	0.61
	$\beta=(0\ 1)'$	n/c	8.04***
Haiti	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
Honduras	$\beta=(1\ 0)'$	n/c	0.23
	$\beta=(0\ 1)'$	n/c	12.32***
Jamaica	$\beta=(1\ 0)'$	n/c	n/a
	$\beta=(0\ 1)'$	n/c	n/a
Mexico	$\beta=(1\ 0)'$	21.97***	n/c
	$\beta=(0\ 1)'$	30.94***	n/c

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Country	Restriction	Aggregated model (1992–2019)	Aggregated model (1992–2023)
Nicaragua	$\beta=(1\ 0)'$	n/c	n/a
	$\beta=(0\ 1)'$	n/c	n/a
Panama	$\beta=(1\ 0)'$	n/c	0.96
	$\beta=(0\ 1)'$	n/c	30.41***
Paraguay	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
Peru	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
Dominican Republic	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c
Saint Vincent and the Grenadines	$\beta=(1\ 0)'$	10.56***	n/a
	$\beta=(0\ 1)'$	0.40	n/a
Saint Lucia	$\beta=(1\ 0)'$	n/c	2.15
	$\beta=(0\ 1)'$	n/c	7.54***
Suriname	$\beta=(1\ 0)'$	n/c	18.20***
	$\beta=(0\ 1)'$	n/c	14.63***
Trinidad and Tobago	$\beta=(1\ 0)'$	7.70***	n/a
	$\beta=(0\ 1)'$	13.17***	n/a
Uruguay	$\beta=(1\ 0)'$	12.61***	14.75***
	$\beta=(0\ 1)'$	7.77***	9.28***
Venezuela	$\beta=(1\ 0)'$	n/c	n/c
	$\beta=(0\ 1)'$	n/c	n/c

Note: *** and * indicate significance at the 1% and 10% level, respectively. n/a = not available, n/c= not cointegrated.



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