

# **ECONOMIC GROWTH AND THE PUBLIC SECTOR: A COMPARISON OF CANADA AND ITALY, 1870 TO 2013**

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**PRESENTATION PREPARED FOR TWO DYNAMIC PATHS ON A SHARED ROAD: CANADIAN-ITALIAN COOPERATION AT 150 AND 156**

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# CANADA AND ITALY

- **FOUNDED AS MODERN STATES IN THE MID-NINETEENTH CENTURY: CANADA IN 1867 AND ITALY IN 1861.**
- **BOTH ARE ADVANCED DEVELOPED COUNTRIES WITH HIGH STANDARDS OF LIVING AND MEMBERS OF THE G-7.**
- **BOTH COUNTRIES STARTED AS CONSTITUTIONAL MONARCHIES AND MORE SIGNIFICANTLY, BOTH HAVE STRONG REGIONAL ECONOMIC VARIATIONS.**

# CANADA AND ITALY

- **MOTIVATION FOR THE PAPER: THE QUESTION WE ADDRESS IS WHETHER CENTRAL GOVERNMENT EXPENDITURES AS A PERCENTAGE OF GDP GOVERNMENT CORRELATES WITH ECONOMIC GROWTH.**
- **OUR RESULTS ARE PRELIMINARY AND A WORK IN PROGRESS.**
- **WE PROVIDE SOME POSSIBLE EXPLANATIONS FOR OUR PRELIMINARY RESULTS.**

# **THE PUBLIC SECTOR IN CANADA & ITALY**

- **BOTH COUNTRIES BASED ON PRINCIPLES ROOTED IN CLASSICAL LIBERAL ECONOMIC THOUGHT (NOT AS ENTRENCHED IN ITALY).**
- **CANADA: FEDERAL GOVERNMENT HAD NATIONAL BUILDING ROLE – INFRASTRUCTURE IN 19<sup>TH</sup> CENTURY & TRANSFERS IN 20<sup>TH</sup> CENTURY**
- **ITALY: CENTRAL GOVERNMENT'S NATIONAL BUILDING ROLE INVOLVED DEALING WITH INDUSTRIALIZATION & REGIONAL ECONOMIC DISPARITIES**

# **THE STATE & ECONOMIC GROWTH**

- **ROLE OF GOVERNMENT COMPARED IN CANADA AND ITALY W.R.T. ECONOMIC GROWTH BY COMPARING THE RELATIONSHIP BETWEEN REAL GDP GROWTH, PUBLIC SECTOR SIZE AND THE DEBT TO GDP RATIO OVER THE LONG TERM.**
- **TRADITIONAL DEFINITION OF PUBLIC SECTOR SIZE IS USED: GOVERNMENT SPENDING AS A SHARE OF GDP.**
- **REGRESSION ANALYSIS FINDS A HUMP-SHAPED SCULLY/BARS CURVE FOR BOTH CANADA AND ITALY.**



# **BARS CURVE (BARRO, ARMEY, RAHN & SCULLY)**

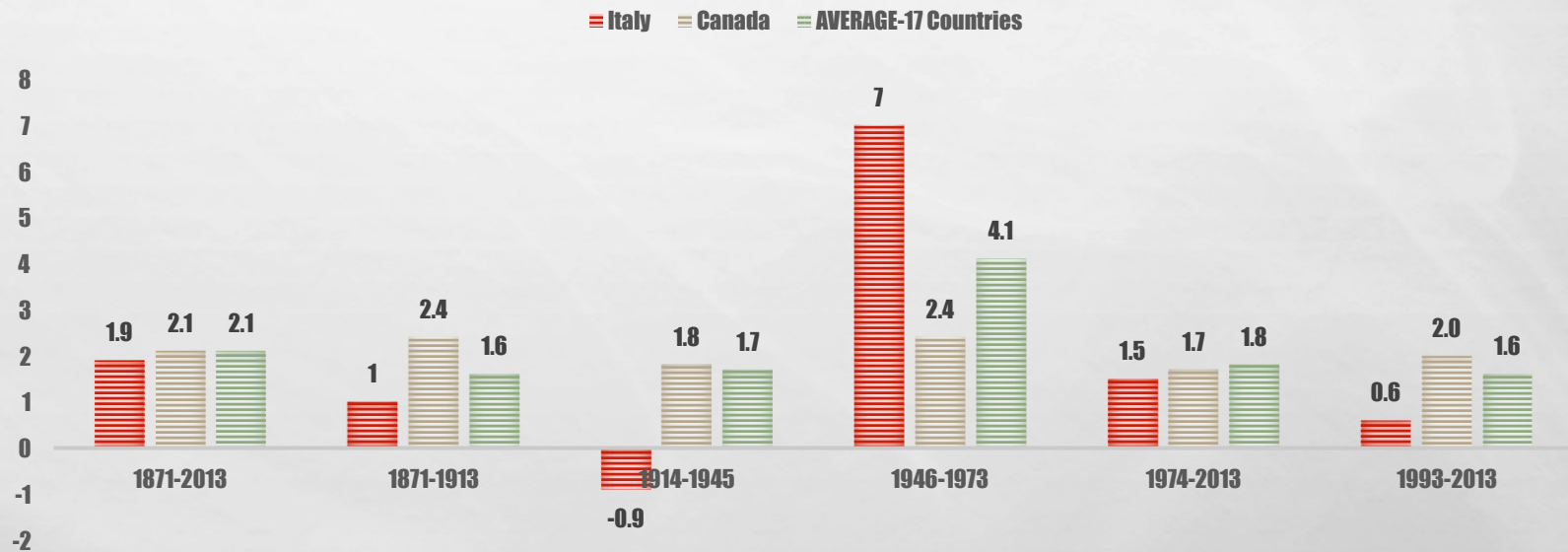
- **A HUMP-SHAPED RELATIONSHIP BETWEEN GOVERNMENT SIZE AND THE RATE OF ECONOMIC GROWTH**
- **SCULLY CURVE TELLS US THAT AS THE PUBLIC SECTOR FIRST EXPANDS, IT HAS A POSITIVE EFFECT ON ECONOMIC GROWTH AS THE STATE DEVELOPS AND PROVIDES INFRASTRUCTURE TO COMPLEMENT PRIVATE SECTOR ACTIVITY.**
- **HOWEVER, BEYOND A CERTAIN POINT, THE PUBLIC SECTOR BEGINS DIVERTING RESOURCES INTO LESS PRODUCTIVE USES, FACILITATING RENT SEEKING AND REQUIRING HIGHER TAXES THAT REDUCE GROWTH.**

# DATA

- **FROM THE JORDÀ-SCHULARICK-TAYLOR (JST) MACROHISTORY DATABASE A COMPREHENSIVE MACRO-FINANCIAL DATASET CONSISTING OF 29 TIME SERIES VARIABLES FOR 17 COUNTRIES FROM 1870 TO 2013.**
- **THE DATA SET AND DOCUMENTATION ARE AVAILABLE AT: [HTTP://WWW.MACROHISTORY.NET/DATA](http://www.macrohistory.net/data).**

# FIGURE 1

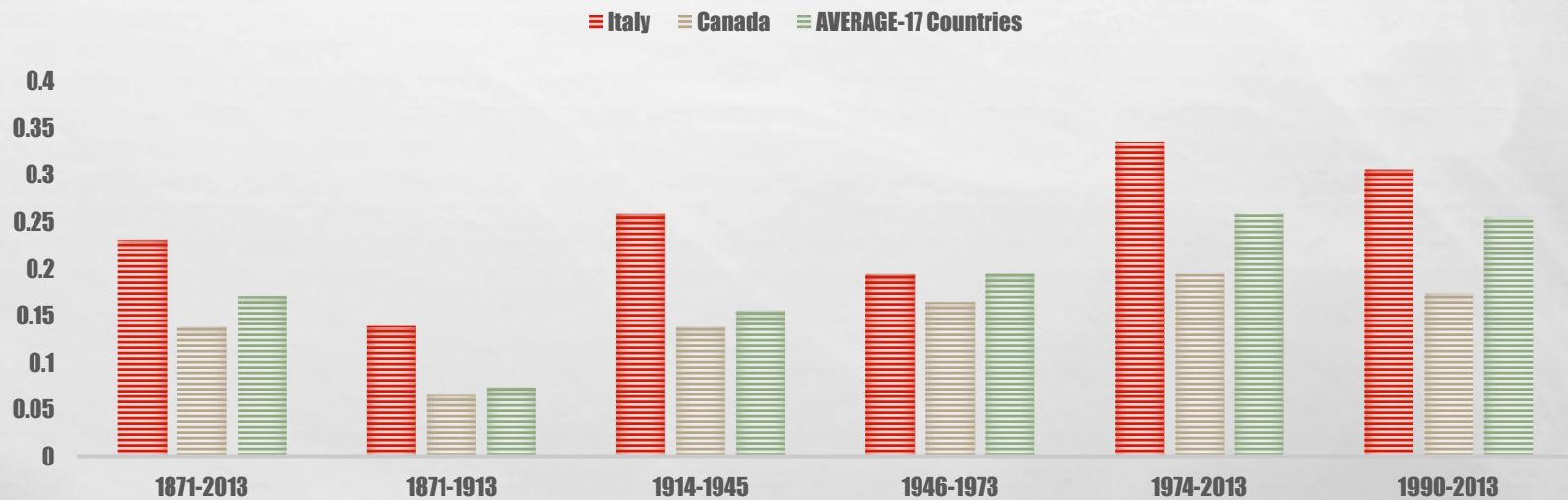
## AVERAGE ANNUAL GROWTH RATES OF REAL PER CAPITA GDP





# FIGURE 2

## AVERAGE CENTRAL GOVERNMENT EXPENDITURE TO GDP RATIO



# REGRESSION MODEL

- (1)  $Y_T = A_0 + A_1 \text{GOVTOGDP}_T + A_2 \text{GOVTOGDP}_T^2 + A_3 \text{WW1}_T + A_4 \text{WW2}_T + A_5 \text{DEBTTGDP}_T + A_6 \text{LTRATE}_T + A_7 \text{EXPTGDP}_T + A_8 \text{RGDPMAD}_{T-1} + A_9 \text{RGDPCGROWTH}_{T-1} + A_{10} \text{GREATDEPRESSION} + U_T$

# VARIABLES

- $(Y_T)$  IS REAL GDP GROWTH AS CONSTRUCTED FROM VARIABLES FOR NOMINAL GDP AND CPI IN THE JST DATASET.
- RATIO OF GOVERNMENT EXPENDITURE TO GDP (GOVTOGDP), AS WELL AS GOVERNMENT EXPENDITURE TO GDP SQUARED (GOVTOGDPSQ). *NOTE: THIS IS CENTRAL GOVERNMENT EXPENDITURE.*
- DEBT TO GDP RATIO (DEBTGDP)
- LONG-TERM INTEREST RATES (LTRATE)
- THE EXPORT TO GDP RATIO (EXPTOGDP)
- DUMMY VARIABLES FOR WORLD WAR I (1914-18), WORLD WAR II (1939-45), AND THE GREAT DEPRESSION.
- AS WELL, WE INCLUDE THE ONE-YEAR LAG OF REAL PER CAPITA GDP (RGDPMAD) AND GROWTH RATE OF REAL PER CAPITA GDP (RGDPCGROWTH)

# ESTIMATION TECHNIQUE

- **FEASIBLE GENERALIZED LEAST SQUARES (FGLS). THE FGLS ESTIMATES ARE MADE FIRST UNDER THE ASSUMPTIONS OF HOMOSCEDASTICITY AND NO AUTOCORRELATION, AND THEN FOR THE ASSUMPTION OF HETEROSCEDASTICITY AND FIRST ORDER AUTO-CORRELATION.**
- **THE FIRST RESULTS FOR THE FGLS REGRESSIONS DONE SEPARATELY FOR CANADA AND ITALY FOR THE PERIOD 1870 TO 2013.**
- **RESULTS ALSO ADJUSTED FOR OUTLIERS. REAL GDP GROWTH RATES  $>10$  PERCENT AND  $<-10$  PERCENT DROPPED.**

# RESULTS

**TABLE 4: Outlier Adjusted Regressions, Canada and Italy\***

Dependent Variable: Real GDP Growth Rate

	Set 1**				Set 2***			
	Canada	Italy	Canada	Italy	Canada	Italy	Canada	Italy
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	z	z	z	z	z	z	z	z
<i>Government expenditure to GDP ratio</i>	45.91	1.41	50.18	1.99	46.66	1.53	50.16	1.98
<i>Government expenditure to GDP ratio squared</i>	-104.63	-1.69	-76.92	-1.67	-105.53	-1.80	-76.91	-1.67
<i>Dummy variable for World War 1</i>	-4.55	-1.90	-3.92	-1.35	-4.06	-1.81	-3.92	-1.35
<i>Dummy variable for World War 2</i>	3.66	0.79	-0.18	-0.06	3.56	0.78	-0.17	-0.06
<i>Government debt to GDP ratio</i>	-2.27	-0.85	-5.98	-4.79	-2.00	-0.80	-5.98	-4.79
<i>Long term interest rates</i>	-0.28	-1.07	0.04	0.27	-0.28	-1.14	0.04	0.27
<i>Export to GDP ratio</i>	3.50	0.36	-12.21	-0.71	1.10	0.12	-12.24	-0.71
<i>Real Per Capita GDP Lagged One Year</i>	0.00	-0.53	0.00	-0.46	0.00	-0.47	0.00	-0.46
<i>Real Per Capita GDP Growth Lagged One Year</i>	0.22	2.64	-0.21	-1.82	0.28	3.44	-0.21	-1.82
<i>Great Depression</i>	-6.46	-2.90	-6.05	-3.70	-6.10	-2.91	-6.05	-3.70
<i>Constant</i>	1.68	0.78	4.11	1.13	1.68	0.84	4.11	1.13
<i>Wald Chi Squared</i>	39.41		58.15		14.67		58.11	
<i>N</i>	126		130		126		130	

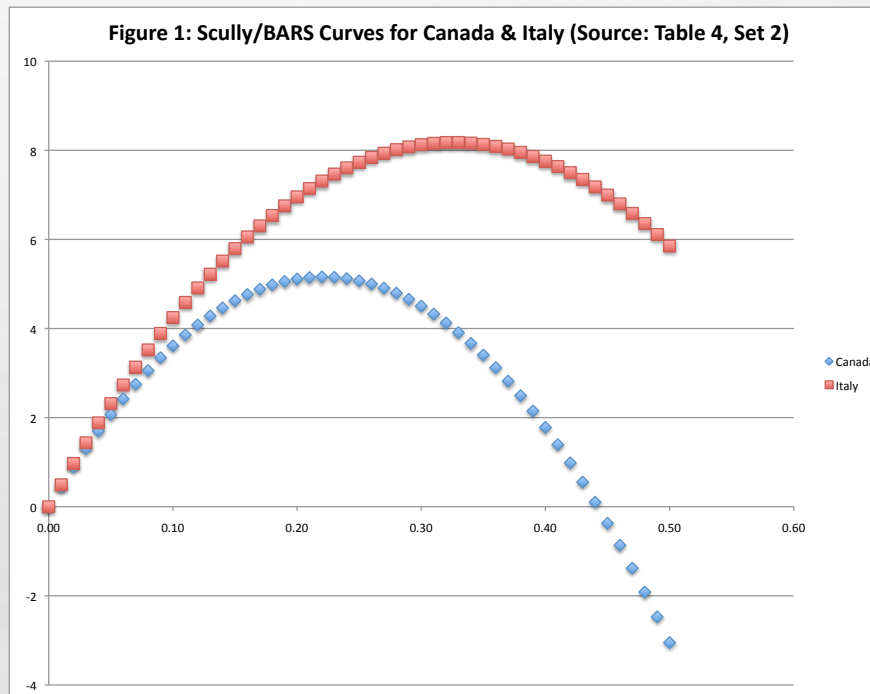
\* Dropping growth rates >10 percent and <-10 percent.

\* Homoscedastic, no autocorrelation

\*\* Heteroskedastic, AR(1)



# SCULLY CURVES



# SCULLY CURVE PRELIMINARY RESULTS

- **REAL GDP GROWTH IN CANADA MAXIMIZED AT A CENTRAL GOVERNMENT SIZE OF 22 PERCENT WITH CORRESPONDING REAL GDP GROWTH AT 5.16 PERCENT. CURRENTLY HAS A CENTRAL GOVERNMENT SIZE OF ABOUT 14 PERCENT OF GDP WHILE REAL GDP GROWTH OVER THE PERIOD 2000 TO 2013 AVERAGED 2.8 PERCENT.**
- **ITALY MAXIMIZES REAL GDP GROWTH AT A PUBLIC SECTOR SIZE OF 33 PERCENT WITH A CORRESPONDING PEAK REAL GDP GROWTH RATE OF 8.18 PERCENT. CURRENTLY HAS A CENTRAL GOVERNMENT SHARE OF GDP AT 30 PERCENT WITH REAL GDP GROWTH OVER THE PERIOD 2000 TO 2013 AVERAGING -0.4 PERCENT.**

# **DISCUSSION**

# CANADA

- **WE EMPHASIZE THAT THE SIZE OF THE CENTRAL GOVERNMENT IS CERTAINLY NOT THE ONLY DETERMINATE OF A COUNTRY'S ECONOMIC PERFORMANCE, BUT IT CERTAINLY IS AN IMPORTANT FACTOR.**
- **GIVEN THE SHIFT IN THE COMPOSITION OF CANADIAN FEDERAL GOVERNMENT SPENDING OVER TIME AND THE EVIDENCE THAT THE FEDERAL EXPENDITURE TO GDP RATIO MAY BE BELOW THE GROWTH MAXIMIZING POINT, ONE POSSIBLE POLICY PRESCRIPTION FOR CANADA'S FEDERAL GOVERNMENT IF IT WISHES TO ENHANCE ECONOMIC GROWTH WOULD BE TO BOOST FEDERAL SPENDING ON PHYSICAL INFRASTRUCTURE AND PERHAPS REDUCE THE AMOUNT GOING PRIMARILY TO TRANSFERS.**
- **GIVEN CANADA'S HIGH PER CAPITA INCOME AND STATE OF ECONOMIC DEVELOPMENT AND RELATIVELY ROBUST GROWTH WITHIN THE G-7, THIS WOULD AT BEST INVOLVE SOME RELATIVELY MINOR TWEAKING OF THE FEDERAL EXPENDITURE ROLE.**
- **NOTE THAT THESE POLICY SUGGESTION DO NOT TAKE INTO ACCOUNT PROVINCIAL FISCAL SITUATIONS, INCLUDING PROVINCIAL DEBT LEVELS.**

# ITALY

- **ITALY'S ECONOMIC PERFORMANCE IS CAUSE FOR CONCERN, NOT ONLY BASED ON COMPARISONS WITH CANADA AND OTHER G-7 COUNTRIES, BUT ALSO WITH RESPECT TO ITS OWN HISTORICAL PERFORMANCE.**
- **CLEARLY, INCREASING ITALY'S PUBLIC SECTOR SIZE FROM 30 TO 33 PERCENT WILL NOT CLOSE THE GAP BETWEEN GROWTH AVERAGING -0.4 PERCENT AND PEAK PERFORMANCE OF 8 PERCENT. WHAT FACTORS COULD ACCOUNT FOR THIS GAP?**
- **WE NEED TO KEEP IN MIND THAT ITALY'S GENERAL PUBLIC DEBT IN 2015 AT 157% OF GDP IS THE THIRD HIGHEST IN THE OECD COUNTRIES, COMPARED TO CANADA'S 116% OF GDP (OECD (2017), GENERAL GOVERNMENT DEBT (INDICATOR). DOI: 10.1787/A0528CC2-EN (ACCESSED ON 14 JUNE 2017))**



# **SOME EXPLANATION FOR ITALY**

- **THE COMPARISON OF CANADA AND ITALY, 2 ADVANCED INDUSTRIALIZED COUNTRIES PROVIDES A KIND OF NATURAL EXPERIMENT AS TO HOW DIFFERENT POLICY CHOICES IMPACT ECONOMIC GROWTH.**
- **WHILE DIFFERING RATES OF GROWTH HAS MANY INGREDIENTS, ONE DIFFERENCE THAT STANDS OUT IS THE REDISTRIBUTION OF INCOME THROUGH SOCIAL PROGRAMS.**
- **WHILE THERE ARE REGIONAL DISPARITIES IN CANADA, A MUCH SMALLER PERCENTAGE OF THE POPULATION LIVES IN RELATIVELY UNDERDEVELOPED AREA OF THE COUNTRY COMPARED TO ITALY. APPROX. 14 MILLION PEOPLE (23% OF THE POP) LIVE IN SOUTHERN ITALY, COMPARED TO 2.3 MILLION (6.4 %) IN THE ATLANTIC PROVINCES.**

# COMPARING SOCIAL SPENDING

- **EDUCATION: CANADA 20% OF GOVERNMENT SPENDING; ITALY 22%**
- **HEALTH: ITALY SPENDS LESS PER CAPITA ON PUBLIC HEALTH CARE COMPARED TO CANADA (VRS US\$2470 VRS US\$3262) BUT SPENDING EMPHASIS DIFFERS:**
  - **3.3 HOSPITAL BEDS/1000 POP IN ITALY VERSUS 2.7 IN CANADA**
- **OVERALL SOCIAL SPENDING: ITALY 28.9% OF GDP VERSUS 17.2% IN CANADA. IT IS THE 4<sup>TH</sup> HIGHEST OF THE OECD COUNTRIES (AVERAGE 21%)**
- **SOCIAL BENEFITS TO HOUSEHOLDS: 20.88% OF GDP IN ITALY VRS 9.95% FOR CANADA**
- **SPENDING ON PENSIONS (% OF GDP): CANADA 4.5% VRS ITALY 16.3% (OECD AVERAGE IS 8.2%)**

# **AFFORDABILITY OF SOCIAL SPENDING**

- **SOCIAL SECURITY CONTRIBUTIONS (% OF GDP): CANADA 4.9%, ITALY 13%**
- **WHILE ITALY SPENDS MORE ON SOCIAL SPENDING, THE PERCENTAGE OF WORKING AGE POPULATION IS ONLY 53.3%, COMPARE TO CANADA'S 73.3%**
- **THE TAX WEDGE (% OF LABOUR COST): CANADA 31.4% VRS 47.8% IN ITALY. THE AVERAGE TAX WEDGE MEASURES THE EXTENT TO WHICH TAX ON LABOUR INCOME DISCOURAGES EMPLOYMENT. IN THE OECD THE AVERAGE IS 36%.**

# COMPARING SOCIAL SPENDING OF CANADA AND ITALY, 2016 (SOURCE: OECD)

	Canada	Italy
Education Expenditure as a % of GOV EXP	20	22
Govt Health Expenditures as a % of GDP	7.2	6.5
Social Spending as a % of GDP	17.2	28.9
Social Benefits to Households as % of GDP	9.95	20.88
Tax Wedge (as a % of labour cost)	31.4	47.8

# CONCLUSIONS

- **WE HAVE LOOKED AT 2 RELATIVELY NEW COUNTRIES THAT HAVE BOTH BECOME RELATIVELY WEALTHY AND ARE PART OF THE G7 GROUP.**
- **WHAT STANDS OUT IN THEIR ECONOMIC HISTORIES IS THAT IN THE LAST 20 YEARS THERE HAS BEEN A DIVERGENCE IN ECONOMIC PERFORMANCE. CANADA HAS CONTINUE TO PERFORM RELATIVELY WELL, WHEREAS ITALY'S ECONOMY HAS BARELY GROWN.**
- **WE HAVE ESTIMATED THE SCULLY CURVE FOR THE 2 COUNTRIES. THE AMOUNT OF GDP SPENT BY GOVERNMENT IS A POLITICAL DECISION.**



# CONCLUSIONS

- **ONE CONTRIBUTING FACTOR FOR THE RELATIVELY STAGNANT ECONOMY IN THE LAST QUARTER CENTURY IN ITALY IS THE PERCENTAGE OF GOVERNMENT SPENDING ON SOCIAL PROGRAMS, ALONG WITH HIGHER TAXATION AND A LOW LABOUR PARTICIPATION RATE IN THE ECONOMY.**
- **PUBLIC POLICY MATTERS A GREAT DEAL IN THE PERFORMANCE OF AN ECONOMY.**