Economic Impacts of Proposed State Government FY2011-FY2012 Budget Reductions in Education, Health, and Human Services for the Commonwealth of Virginia

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In response to a request from the Commonwealth Institute for Fiscal Analysis, the Center for Economic and Policy Studies, a unit of the Weldon Cooper Center for Public Service at the University of Virginia, undertook an analysis of the economic impacts of FY 2011-2012 biennial budget changes for the areas of health and human services and education. Economic impacts are computed for several different budget scenarios, including budgets proposed by former Governor Tim Kaine, the House of Delegates, the Senate, and a House-Senate budget conference committee agreement approved on March 13, 2010. The Commonwealth Institute for Fiscal Analysis provided information on Virginia budget spending reductions by major category and budgeting governmental body. These spending reductions were converted to variable inputs for use in a REMI PI+ (Regional Economic Models, Inc. Policy Insight Plus) model calibrated for Virginia. The REMI model is a respected, peer reviewed model that has been used by many states and independent analysts to study and quantify the economic impacts of budgetary decisions. Economic impact results are reported in terms of employment by major industry, gross domestic product, and personal income.

Budget Scenarios

As a result of the severe national recession that began in late 2007 and continued through at least the first half of 2009, the Commonwealth of Virginia has experienced large decreases in projected revenues and concomitant increases in demand for public services, public health insurance, and unemployment compensation. Deficits in FY 2009 and FY 2010 were addressed by using federal fiscal stimulus transfers from the American Recovery and Reinvestment Act, tapping the Virginia Revenue Stabilization Fund, cutting expenditures on public services, and using temporary budget remedies.[1] However, budget forecasts projected continued budget shortfalls of approximately $4.2 billion for the FY 2011 – FY 2012 biennial budget. In order to close these large budget gaps, former Governor Kaine's budget as well as House, Senate, and Conference Committee amended budgets relied on various combinations of additional public service cuts, reduction in state aid to localities, revenue increases, drawing down of the Virginia Revenue Stabilization Fund, and reduced contributions to public pension funds.

This analysis compares the economic impacts of these alternative budget scenarios for proposed funding reductions in the areas of health and human services, K-12 education, and higher education. The Commonwealth Institute for Fiscal Analysis provided budget figures by major budget categories and executive/legislative body to be used in the analysis (see **Table 1**). Education (K-12 and higher education) reductions reflect decreases in general fund expenditures.[2] Health and human services decreases include reductions in both general fund and non-general fund expenditures. Non-general fund expenditure decreases were used in the health and human services analysis in order to capture the loss of significant matching funds from the federal government. The budget information summarized in this table was used to develop inputs for economic modeling.

1 Regimbal, Jr. James J. 2009. Virginia's state budget: A train wreck about to happen. *The Virginia News Letter*. Volume 85, No. 5 (October) http://www.coopercenter.org/sites/default/files/publications/vanl1009.pdf

2 The education budget figures examined do not include funding for cultural agencies administered by the Secretary of Education such as the Virginia Museum for Fine Arts, Frontier Culture Museum, Gunston Hall, Jamestown-Yorktown Foundation, the Library of Virginia, and Virginia Commission for the Arts.

Table 1. Governor Kaine, Senate, House of Delegates, and Conference Committee Budget Summary

	Higher Education	K-12 Education	Health and Human Services	Total
Governor Kaine				
FY 2011	-$73,070,850	-$74,152,358	-$495,785,907	-$643,009,115
FY 2012	-$228,181,277	-$287,741	-$687,955,885	-$916,424,903
Total	-$301,252,127	-$74,440,099	-$1,183,741,792	-$1,559,434,018
House				
FY 2011	-$81,755,848	-$400,488,941	-$680,747,974	-$1,162,992,763
FY 2012	-$244,103,825	-$330,450,509	-$897,469,692	-$1,472,024,025
Total	-$325,859,673	-$730,939,449	-$1,578,217,666	-$2,635,016,788
Senate				
FY 2011	-$73,070,850	-$111,553,597	-$525,813,250	-$710,437,697
FY 2012	-$237,638,277	-$95,838,076	-$1,089,310,744	-$1,422,787,097
Total	-$310,709,127	-$207,391,673	-$1,615,123,994	-$2,133,224,794
Conference				
FY 2011	-$77,678,349	-$168,077,498	-$610,574,671	-$856,330,518
FY 2012	-$245,998,776	-$162,233,776	-$1,047,364,423	-$1,455,596,975
Total	-$323,677,125	-$330,311,274	-$1,657,939,094	-$2,311,927,493

Source: Classification based on information obtained from the Commonwealth Institute for Fiscal Analysis

Methodology

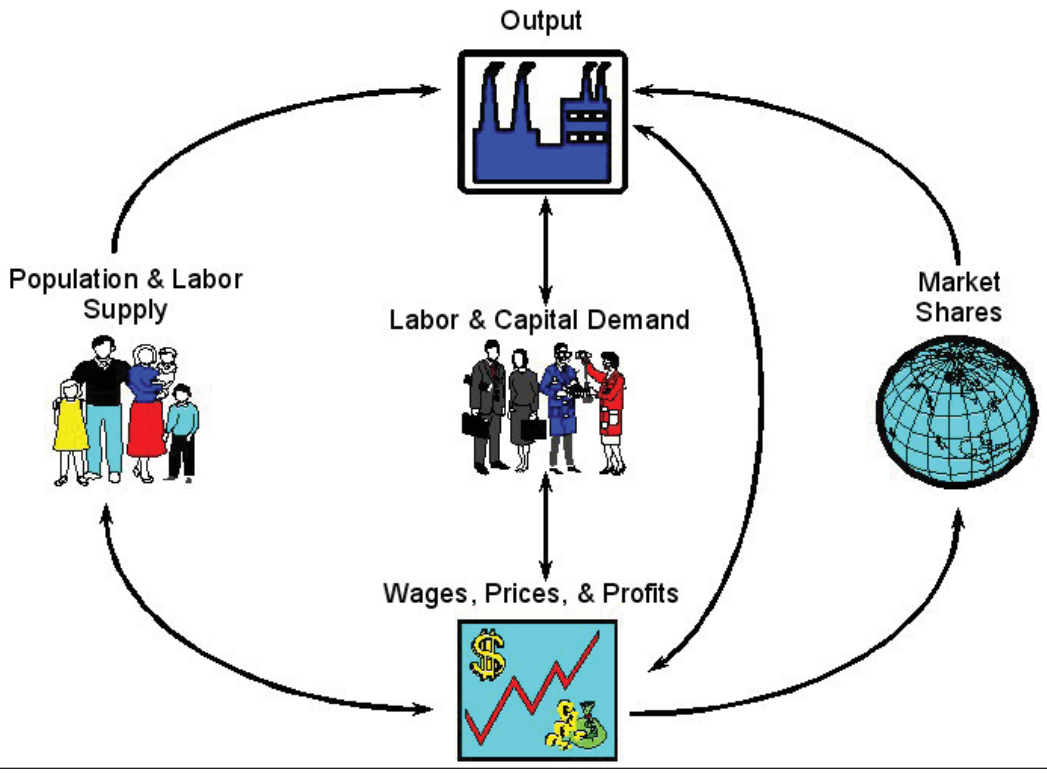
The Regional Economic Models, Inc. Policy Insight Plus (REMI PI+) model is a dynamic, multi-sector regional economic simulation model used for economic forecasting and measuring the impact of public policy changes on economic activity, population characteristics, and government finances. REMI PI+ is a conjoined model that utilizes different economic modeling approaches, including input-output analysis, econometric forecasting, and computable general equilibrium. The model used in this analysis includes 70 industry sectors and was customized for the state of Virginia. REMI PI+ and earlier versions of the software have been used in thousands of national and regional economic studies, including many studies of state taxation and budgetary issues around the United States.[3]

3 See, for example: Washington Research Council. 2010. *The economic impact of hiking taxes to close the budget gap*; Hoffman, Dennis and Tom R. Rex. 2009. *The economic effects of government spending reductions relative to other options*. Center for Competitiveness and Prosperity Research, Arizona State University. Brown, Daniel T. 2009. *Economic impact of increasing the Delaware cigarette tax*. Center for Applied Demography and Survey Research, University of Delaware; Fiscal Policy Institute 2003. *Schools, taxes and the New York economy: An economic analysis of a balanced budget alternative to the Governor's school aid cuts.*

The model contains five major modules or blocks (see **Figure 1**), which interact simultaneously. The Output Block determines expenditures for final demand, including consumption, investment, government and imports as well as demand for intermediate inputs. Final demand responds to changes in other model blocks. This module contains a key engine in the model, an input-output model based on the Bureau of Economic Analysis (BEA) benchmark transactions table that measures flows of goods and services among industries. The Labor and Capital Demand Block determines employment, capital and fuel demand as well as labor productivity. The Population and Labor Force Block determines the population characteristics of the region, including age, race and sex composition. Labor force participation adjusts in response to changes in wages and employment opportunities. A key driver of population changes is migration, which is influenced by relative wage levels as well as amenities. The Wage, Price and Costs Block determines factor and product price. The Market Shares Block helps to measure exports from and imports to the region. Changes in market share are driven by production costs, demand characteristics, distance to markets and output.

In order to simulate the budget reductions, state government spending categories were converted to REMI policy

Figure 1. Modular Structure of the REMI PI+ Model



variable inputs. Five categories of expenditures were identified: expenditures that would directly affect the educational services industry including K-12 and higher education; expenditures that would affect hospitals, ambulatory health care facilities (including physicians offices and other professional health services), nursing and residential care facilities, and social assistance; expenditures on Medicaid and FAMIS/SCHIP that would affect consumer expenditures on health care, and expenditures that affected primarily state and local government administrative operations or were otherwise difficult to assign to any particular industry. Reductions in Medicaid/FAMIS were assigned to consumer expenditure categories using information from the U.S. Department of Health and Human Services, Centers for Medicaid and Medicare Services, National Health Expenditures Accounts.[4] Based on this publication, state and local government public health care expenditures for personal health care were allotted to hospitals (37.3 percent), physicians (13.2 percent), dentists (1.3 percent), other professional medical services (14.6 percent), nursing homes (6.9 percent), durable medical equipment (0.2 percent), and private health insurance (9.7 percent). These expenditures were assigned to the REMI output model block and policy variables as indicated in **Table 2**.

Economic simulations were restricted to the time frame of the biennial budget years, FY 2011 and FY 2012. In order to make the analysis more manageable, the calendar years used within the model year were assumed to align with the fiscal years used for budgeting purposes.

It is important to note that only the immediate expenditure effects of the spending reductions within the modeling framework are captured in the analysis. These effects will include direct expenditure effects (removal of government spending on payroll, goods, services, and public transfers), indirect effects (the cumulative effect of reduced inter-industry purchases resulting from the direct spending reduction), and induced effects (the cumulative effect of reduced household spending resulting from the direct spending reduction). The total effects will also include the net effect of various market adjustments that accompany the spending reductions within the REMI model during the two-year time interval (i.e., changes in wages, prices, incomes, employment, factor mobility, scale economies, and industry market shares). No effort was made to capture the effect of public spending reductions on human capital as measured by workforce productivity over time, although Virginia studies of K-12 and higher education indicate that these effects may be substantial.[5] Public health spending

4 *National health expenditures accounts: definitions, sources, and methods*, 2008. http://www.cms.hhs.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp#TopOfPage

5 Rephann, Terance J., John L. Knapp, and William M. Shobe 2009. *Study of the economic impact of Virginia public higher education*. Weldon Cooper Center for Public Service, University of Virginia; Michael Cassidy and Sara Okos. 2009. *A new lesson plan: How increasing graduation rates boosts Virginia's economy*. The Commonwealth Institute.

Table 2. Mapping of Budgetary Reductions onto REMI Policy Variables

Budgetary Action	Policy Variable
K-12 Spending	Output block→Industry Sales/Exogenous Production for Educational Services Sectors→Decrease
Higher Education Spending	Output block→Industry Sales/Exogenous Production for Educational Services Sectors→Decrease
Direct Health Care and Social Assistance Spending	Output block→Industry Sales/Exogenous Production for Hospitals, Nursing and Residential Care Facilities, and Social Assistance Sectors→Decrease
State and Local Government Administrative or uncategorizable spending	Output block→State and Local Government Spending, State Government Spending →Decrease
Public Health Insurance Spending (i.e., Medicaid, FAMIS)	Output block→Consumer spending for Non-profit Hospitals, Physicians, Dentists, Other Professional Medical Services, Nursing Homes, Drug Preparations and Sundries, Ophthalmic and Orthopedic Products, and Health Insurance, Income Loss, Workers comp →Decrease

may also affect worker productivity and labor force participation levels.[6] In addition, some forms of public spending may make an area a more attractive place to live.[7] The amenity enhancing effects of public spending are not modeled. This omission should have little effect on the results because the bulk of both productivity and amenity economic effects will play out over longer periods of time than the biennial budget time frame considered in this analysis. Lastly, reductions in public health spending may increase the costs of private health care services by expanding the size of uncompensated care costs absorbed by health care providers and their paying customers. These latter cost shifts are not modeled.

The analysis does not take into consideration the economic impacts of revenue generation or other types of budget reduction alternatives for different budget scenarios. For instance, Governor Kaine's budget proposed increases in personal income taxes in lieu of deeper spending reductions. These personal income tax increases would have a negative impact on state economic activity.[8] House and Senate budgets make substantial savings by reducing contributions to state pension funds. The economic impacts of these latter budgetary actions are difficult to model directly within the REMI framework.

Results

Table 3 shows the results of model simulations for the different budget scenarios considered. All dollar values are expressed in terms of nominal dollars. Not surprisingly, the

6 Dumas, Christopher, William Hall, and Patricia Garrett. 2008. The economic impacts of Medicaid in North Carolina. *North Carolina Medical Journal* 68, 2: 78-87.

7 The presence of colleges and higher quality K-12 schools has been found to raise local residential property values. This result suggests that some types of public spending may produce amenity value (Vandegrift, Donald, Amanda Lockshiss, and Michael Lahr. 2009. Town versus gown: The effect of a college on housing prices and the tax base).

8 Many studies suggest that the immediate effects of state and local government spending reductions on economic activity are more negative than the effects of personal income tax increases. This result is found because state and local government expenditures are more likely to be made locally (e.g., employee payroll) while household expenditures entail substantial leakages in the form of saving and retail purchases of goods produced outside the state. In addition, residents receive an implicit subsidy of state personal income taxes by itemizing and deducting state income taxes from federal income taxes. For additional information, see: Hoffman and Rex. 2009; Orszag, Peter and Joseph Stiglitz. 2001. *Budget cuts versus tax increases at the state level: Is one more counter-productive than the other during a recession?* Center on Budget and Policy Priorities, Washington, D.C.

Table 3. Budget Scenario Employment, Gross Domestic Product, and Income ($ Millions) Impacts by Fiscal Year

	Governor Kaine		House		Senate		Conference	
	2011	2012	2011	2012	2011	2012	2011	2012
Total Employment	-11,137	-14,706	-20,563	-24,087	-12,456	-21,315	-14,801	-22,610
Farm	0	0	0	0	0	0	0	0
Forestry, Fishing, and Other	-3	-3	-5	-5	-3	-5	-4	-5
Mining	0	-1	-1	-1	-1	-1	-1	-1
Utilities	-11	-15	-19	-23	-13	-22	-14	-22
Construction	-506	-807	-844	-1,257	-581	-1,099	-645	-1,153
Manufacturing	-63	-76	-106	-115	-70	-115	-82	-117
Wholesale Trade	-86	-113	-145	-172	-96	-166	-111	-170
Retail Trade	-494	-683	-853	-1,066	-552	-1,020	-643	-1,043
Transportation and Warehousing	-41	-54	-69	-81	-46	-78	-53	-80
Information	-49	-65	-90	-105	-56	-94	-65	-99
Finance and Insurance	-179	-228	-298	-339	-198	-363	-231	-357
Real Estate, Rental and Leasing	-181	-245	-348	-410	-204	-362	-248	-384
Professional and Technical Services	-203	-277	-338	-417	-229	-400	-265	-412
Management of Companies and Enterprises	-24	-28	-39	-41	-26	-43	-31	-44
Administrative and Waste Services	-425	-571	-746	-891	-473	-843	-565	-876
Educational Services	-2,098	-3,092	-6,908	-7,775	-2,637	-4,532	-3,513	-5,540
Health Care and Social Assistance	-4,043	-4,960	-5,847	-6,722	-4,068	-7,515	-5,082	-7,683
Ambulatory health care services	-513	-719	-799	-1,052	-554	-1,304	-619	-1,185
Hospitals	-1,247	-1,724	-1,735	-2,169	-1,313	-2,688	-1,814	-2,741
Nursing and residential care facilities	-1,174	-1,606	-1,861	-2,261	-1,066	-2,474	-1,361	-2,470
Social assistance	-1,110	-911	-1,452	-1,240	-1,135	-1,049	-1,290	-1,288
Arts, Entertainment, and Recreation	-70	-96	-126	-152	-79	-139	-93	-145
Accommodation and Food Services	-255	-361	-441	-562	-280	-525	-333	-546
Other Services	-257	-325	-448	-498	-289	-483	-338	-495
Public Administration	-2,151	-2,707	-2,894	-3,455	-2,556	-3,512	-2,486	-3,437
Gross Domestic Product	-649.9	-958.4	-1,123.2	-1,496.7	-728.7	-1,386.6	-850	-1,441
Personal Income	-419.9	-632.8	-741.0	-1,006.3	-471.3	-909.4	-553	-953
Disposable Personal Income	-357.0	-540.1	-629.5	-858.8	-400.8	-775.7	-470.0	-813.0

larger budget reductions are associated with larger negative economic impacts.

Governor Kaine's proposed education and health and human service budget cuts would have resulted in an estimated loss of 11,137 total jobs in 2011 and 14,706 jobs in 2012. Approximately one-third of the job losses would be concentrated in health care and social assistance, a category that includes ambulatory health care services (e.g., physicians, dentists, therapists, outpatient care centers, medical and diagnostic labs), hospitals, nursing and residential assistance, and social assistance (e.g., child and youth services, services for the elderly and persons with disabilities, family services, food and housing services, child day care, vocational rehabilitation). Approximately 3,100 education jobs (including both K-12 and higher education sectors) would be lost in 2012. In addition, approximately 2,700 public administrative job losses are estimated to occur in 2012. The total gross domestic product and personal income impacts are $958.4 million and $632.8 million respectively in 2012.

The House budget cuts result in the biggest economic impacts, an estimated loss of 20,563 jobs in 2011 and 24,087 in 2012 and estimated gross domestic product and personal income impacts of -$1.497 billion and -$1.006 billion by 2012. Senate budget industry impacts sum to a loss of 12,456 total jobs in 2011 and 21,315 in 2012 with decreases in gross domestic product and personal income of -$1.387 billion and $909.4 million in 2012.

The compromise budget that resulted from conference committee and was approved by both House and Senate results in economic impact estimates between the House and Senate estimates. The REMI model estimates that 14,801 jobs would be lost in 2011 and 22,610 in 2012 with drops in gross domestic product of -$850 million in 2011 and -$1.441 billion in 2012 and personal income losses of -$553 million in 2011 and -$953 million in 2012.

Table 4 breaks out the economic impact estimates by education and health and human service budgets. Approximately two-thirds of the conference budget economic impact on employment (14,941 jobs out of 22,610 total jobs in 2012) can be attributed to the health and human services budget reductions alone. Approximately half of the employment loss resulting from the health and human service cuts occur

Table 4. Conference Budget Employment, Gross Domestic Product, and Income ($ Millions) Impacts by Fiscal Year

	Health and Human Services		Education	
	2011	2012	2011	2012
Total Employment	-9,958	-14,941	-4,843	-7,669
Farm	0	0	0	0
Forestry, Fishing, and Other	-3	-4	-1	-1
Mining	0	-1	0	0
Utilities	-11	-17	-4	-6
Construction	-480	-838	-165	-315
Manufacturing	-62	-89	-20	-28
Wholesale Trade	-84	-128	-27	-42
Retail Trade	-477	-773	-166	-270
Transportation and Warehousing	-40	-60	-13	-20
Information	-44	-66	-21	-33
Finance and Insurance	-181	-287	-50	-71
Real Estate, Rental and Leasing	-159	-243	-90	-141
Professional and Technical Services	-203	-312	-62	-100
Management of Companies and Enterprises	-25	-35	-6	-9
Administrative and Waste Services	-413	-637	-151	-238
Educational Services	-29	-45	-3,484	-5,495
Health Care and Social Assistance	-4,970	-7,512	-112	-171
Ambulatory health care services	-546	-1,077	-73	-108
Hospitals	-1,795	-2,707	-19	-33
Nursing and residential care facilities	-1,350	-2,451	-11	-19
Social assistance	-1,280	-1,277	-9	-12
Arts, Entertainment, and Recreation	-65	-101	-28	-45
Accommodation and Food Services	-251	-408	-82	-138
Other Services	-245	-359	-93	-137
Public Administration	-2,216	-3,027	-270	-410
Gross Domestic Product	-626.1	-1,052.8	-224.0	-388.0
Personal Income	-396.2	-674.5	-156.7	-278.2
Disposable Personal Income	-337.2	-575.9	-132.9	-236.8

in the "health care and social assistance" sector (7,512 of 14,941 total employment in 2012), of which the bulk of this impact is in health care industries. Proposed reductions in educational expenditures result in an estimated loss of 5,495 educational services jobs and 410 public administrative jobs in 2012. Together these sectors account for over three quarters of the total employment impact of 7,669. The residual impact of 1,764 jobs in 2012 can be attributed to indirect, induced and other secondary market adjustment effects.

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