



Drifting Down

What Will Restore Connecticut's Economic Vitality?

The Connecticut Economic Outlook: May 2010

Peter E Gunther, Senior Research Fellow

Connecticut Center of Economic Analysis

University of Connecticut

Drifting Down

SUMMARY

There is currently little prospect for a robust recovery in Connecticut's economy. Like previous CCEA Outlooks, this updated forecast anticipates that state aggregate income will remain essentially flat while employment, despite very modest gains the past four months, will likely contract in the months ahead. While the Legislature has passed and the Governor signed some significant business legislation that should improve Connecticut's performance a few years hence, there are no policy initiatives likely to drive a strong short-term recovery. There is little to argue that the state's revenue picture will improve sufficiently to reduce massive, multi-billion dollar budget deficits over the next two to four years.

However, Connecticut has at hand a powerful tool to drive short-term recovery in jobs and income—more than \$1 billion in earned research and development tax credits that could be translated into capital investments, creating more than 4 million square feet of new advanced manufacturing, pharmaceutical, bioscience, and research space, creating nearly 40,000 new high-wage jobs. Unlike current policy awarding tax credits without any clear link to future activity, this approach rewards past behavior by offering a powerful incentive to make a major forward-looking commitment to Connecticut. Critically, this approach would be entirely self-financing, anchor those activities and those jobs in the state, and deliver a significant boost to the state's fragile finances. After providing a discussion of the traditional CCEA Outlook, this report provides a detailed analysis of the economic impact that this policy—a real 'game changer'—adoption of this policy could deliver.

National and state indicators underscore the difficulty of achieving broad-based economic recovery. Despite an encouraging annualized growth rate of 4.4% over the last two quarters, unemployment remains at unacceptable levels, and current forecasts see very slow improvement. Annual U.S. non-farm employment fell from 137.6 million in 2007 TO 130.9 million in 2009. From Q4 2007 to Q4 2009 the national unemployment rate more than doubled, jumping from 4.6% to 9.6%. But the real employment situation was in fact much worse: discouraged workers left the labor force, resulting in participation rates to fall from 66.0% to 64.8% over the same timeframe. This suggests that real unemployment was about 12%--and millions more are underemployed, working part-time when they want and need full time jobs. The situation is even worse for African Americans where 2009Q4 the unemployment rate rose to 15.3 % and the participation rate plunged to 61.7%. The recent spike in first time claims for unemployment benefits and the continuing dismay job market for current college graduates—up a mere 5% from 2009—underline the continuing national weakness.

An additional worry is that the current drivers of national income growth cannot sustain the modest growth we have seen. The main drivers of the 3.2% annualized growth rate during Q1 were personal consumption (2.6%), inventory replacement (1.6%), and investment in machinery and equipment (0.5%). Increased personal consumption rose, but at the expense of a fall in savings; real disposable income remained flat. Rebuilding inventories increases the costs of doing business and cannot be sustained without other underlying growth in sales. Negative components in national economic growth in Q1 included some of these more basic drivers of growth. Net exports contracted, as did state and local government expenditures, subtracting 0.6% and 0.5% respectively from growth. Ebbing exports, the recent turmoil in financial markets, and even the interruption in air travel resulting from Iceland's prolonged volcanic eruption all undermine the capacity of foreign trade to contribute to growth in the near future. The decline in state and local government expenditures is a delayed result of the financial tsunami that engulfed the national economy over the past two years; absent further federal intervention, state and local expenditures will contract significantly for at least the next two years. Current expectations anticipate ten of thousands of layoffs of teachers, police, and other public sector personnel. State and local finances will recover only when there is a broad, strong general economic recovery.

Connecticut employment fared only slightly better than the national pattern, with an unemployment rate in 2007Q4 of 4.5% rising to 8.3% in 2009Q4. But Connecticut did worse than the nation in growth, with an estimated (seasonal adjusted) state output growing at 2.5% for the last six months, 2.4% for Q1.

CT Real estate markets remain weak. The number and value of housing permits are a fraction of what they were at peak. The large overhang of properties for sale and held in inventories by banks due to bankruptcies remains clear. Data on the real estate markets of Fairfield County and on housing permits in the tri-state area confirm that the real estate malaise is a continuing local, state, and national issue.

Given these patterns, it is clear why this CCEA Outlook sees income indicators flat-lining, with continuing erosion of employment, but at decreased rates.

Connecticut does however have available one powerful tool to challenge the current downward drift and to drive short-term recovery. The state's major employers have accumulated more than \$1 billion in research and development tax credits, which current law makes unusable. But these credits could be turned into incentives to make major capital investments in the next two to three years. Such investments would drive creation of upwards of 40,000 new, high-skill, high-wage jobs and help anchor these major firms in Connecticut. This would also reverse the long-term trend in Connecticut of losing these high-quality jobs and slipping towards lower skill, lower wage jobs. And, perhaps best of all, this approach, by converting these credits into investments, is not simply self-financing, but generates a substantial improvement in state and local revenues.

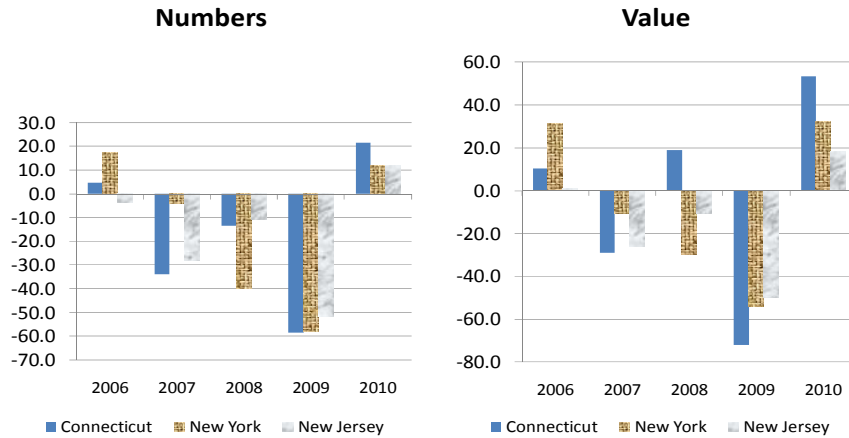
Connecticut Outlook

This CCEA Outlook forecasts that, without bold development policies, national and state recovery will be weak. Even where there are glimmers of prospective growth, caution is warranted.

Chart 1 shows a mild Q1 recovery in housing permits throughout the tri-state region relative to a precipitous decline in Q1 a year ago, accompanied by stronger recovery in the value of permits. The Chart also demonstrates that three first quarter declines in successive years in all three states, except for permit values in Connecticut, have reversed. Those successive declines imply that housing markets have a long way to climb before returning to “normal” levels. For example, in 2006Q1 CT issued 2,179 permits worth \$374 million. In 2009, the number of CT permits was 508 worth \$87 million—permits were thus a mere quarter of their previous high, and their value even relatively smaller.

Chart 1:

% Change in Q1 Tri-State Housing Permits 2006-2010



Source the Bureau of the Census, Housing Permits and Values by State.

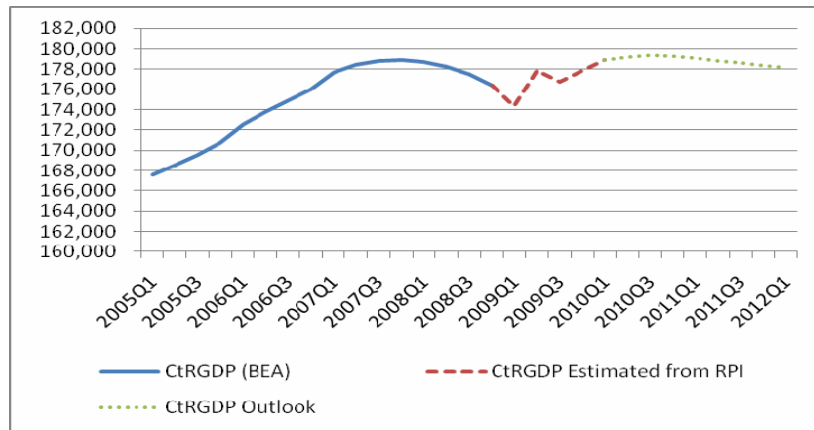
Despite the glimmer or recovery in these numbers, the overhang of housing inventory in high-end and mid-value CT real estate markets does not bode well for construction recovery. In a detailed examination of Greenwich housing markets, Keith Jurow chronicles declining of sales from 150 a month in 2000-2007 to less than 60 in the first three months this year. Greenwich home prices per square foot have slumped 37% since their peak in 2008, and those in more mid-value markets in Fairfield County have fallen near as much. Jurow argues that sellers resisting lower prices and banks withholding their inventories of foreclosures to avoid further disrupting thin markets¹ will prolong the slump. Because it is difficult to sell an occupied house into current markets, slow overall sales may discourage even likely buyers from entering the market, compounding market sluggishness.

Following the cessation of federal incentives to purchase homes at the end of April, the CT housing market will likely remain weak, with housing permits gently falling. With the sluggish national recovery, the outlook for Connecticut is for little growth in total output and none in employment.

¹ <http://www.realestatechannel.com/us-markets/residential-real-estate-1/real-estate-news-fairfield-county-home-sales-connecticut-home-sales-trulia-greenwich-home-sales-florida-home-sales-california-home-sales-2464.php>

Chart 2 plots the forecast for Connecticut’s total output over the next two years. This results from CCEA’s estimates for state output for 2009; the apparent rebound at the end of 2008 corresponds with the timing during which CCEA estimates from data on state output, personal income (PI), and movements in the costs for various goods and services.² Those estimates form the launching point for the Outlook forecast over the next eight quarters. The estimated current momentum—shown with the broken line—is relatively weak, and will likely ebb by at least the end of 2010, and then continue to drift downward into 2012.

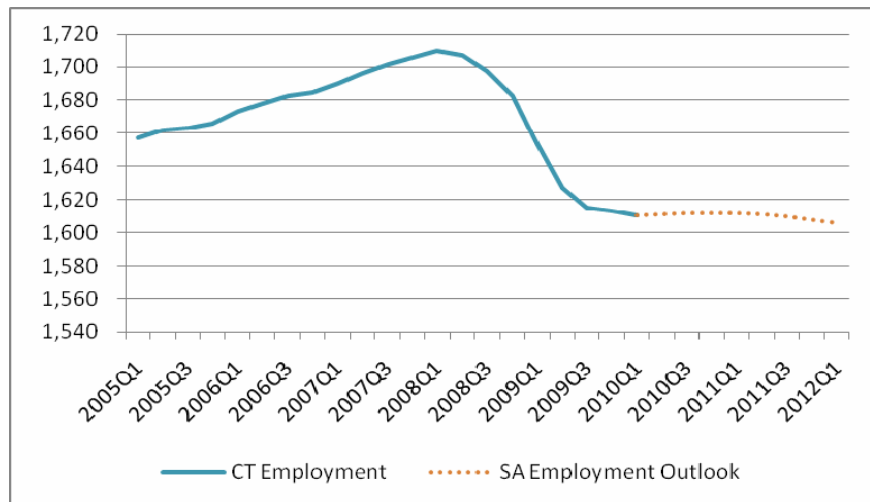
Chart 2: Seasonally Adjusted CtRGDP 2005-2012



The outlook for (seasonally adjusted) employment follows the same basic patterns, as Chart 3 shows. The absence of decline during a period of modest CtRGDP growth is atypical and may indicate that productivity growth in Connecticut is falling behind its historic pace—a worrisome indicator, but consistent with the general deterioration in the quality of Connecticut jobs. On a quarter-to-quarter bases, seasonally adjusted quarterly Connecticut employment is 100,000 below two years ago; that gap widens further if the analysis uses monthly data. This quarter the unadjusted employment series shows employment at 1,596.6 thousand, 13.4 thousand below the seasonally adjusted series. The unadjusted employment series argues the state has significant excess capacity, which will work against recovery especially in construction.

² Official data for 2009 from the U.S. Bureau of Economic Analysis will only be available for the next Outlook; this may result in significant changes.

Chart 3: Employment 2005-2012



Slowing productivity growth in Connecticut results from employment growing in relatively low-productivity services jobs (2.1%); more productive private sector employment, including finance, insurance and real estate (FIRE), continues to decline slowly at a rate of -2.9%, with manufacturing employment rates also falling at -2.3%, and employment in transportation, trade and public utilities shrinking -1.7%. Employment in construction falls at an average annual rate over the two year of this CCEA Outlook by -2.9%. Productivity continues to grow in important sectors; in FIRE (3.2%), non-durable manufacturing (2.1%), and durable manufacturing (0.5%). But for employment to grow in these critical sectors, the sector itself must grow faster than productivity; otherwise, even as the value of the sector expands, it loses jobs. Connecticut also found growth in services (1.1%) but at rates below the growth in service employment, so that productivity per employed declines. Construction output also falls faster (-4.4%) than its employment, revealing declining productivity there as well. Clearly “business as usual” is not going to elevate the CT economy out of its current quagmire to anywhere near its capacity.

Connecticut does not have to depend entirely on external events to shape its own economic future. It has the ability to shape in a significant way its own future, through adoption of aggressive new policies to drive economic recovery and restore the state’s historic competitiveness. The following section evaluates one such policy.

Driving Recovery: A Policy Initiative

Economic recovery is not automatic; recoveries do not necessarily follow historic patterns³. The quality and speed of recovery depends in significant measure from how carefully policy is crafted and whether it is applied with enough flexibility to operate quickly and effectively, avoiding entanglements, delays, and the frustrations of red-tape. Large employers often play a critical role; such firms, based or operating in Connecticut, can choose to consolidate or expand operations at CT locations or elsewhere. Thus Connecticut development policy should seek to retain and expand operations of companies already in the state, while attracting others to locate here expeditiously.

A major plank in state economic development policy has been awarding tax credits for investment (ITC) in research and development. This was sound public policy for a host of reasons, but then the state restricted the use of earned ITCs so severely that larger firms essentially could not use them to any meaningful degree. (See *Driving Recovery* on CCEA's web site.) The state's largest employers have accumulated hundreds of millions of dollars of unused CT R&D ITCs. Unusable ITCs are worthless, undercutting, if not negating, related development policies and confidence in the state. Denying companies avenues to use credits they have earned in good faith directly undermines the state's long-term economic health and diminishes the credibility of any economic development strategy. Funds from discouraged investors dry-up, employment shrinks, growth flattens or reverses, all resulting in further declines in tax revenues, driving deficits deeper. Now is the time to correct this corrosive policy; now is the time to encourage full use of the R&D ITCs through a dynamic policy that looks to the future, drives new investment, creates new jobs, builds a stronger economic foundation, and reverses the long-term pattern of decline in Connecticut's economy.

The Proposal in Brief

Driving Recovery evaluates a policy proposal that, over the next seven years, CT pays out one billion dollars in outstanding R&D ITCs in exchange for a one billion dollar upfront investment in plant and qualified equipment and machinery.⁴ This is not a free ride for the companies, since they make up front investments and pay the carrying costs of capital during both operations and in the interim until their R&D ITCs are redeemed by the state. Without offsetting compensation by the state, financing costs are estimated to be in excess of \$374 million. That consideration ensures that investors will act to make their investments productive to quickly stimulate the CT economy.

³ Paul Krugman, **The Return of Depression Economics and the Crisis of 2008**, Norton 2009.

⁴ Under current rules for qualification the vast majority of M&E including trucks is qualified, albeit, automobiles are not in order to prevent abuses tied to luxury purchases rather than true investments.

To accelerate the process, current holders of CT R&D ITCs, investing individually or collectively, must make qualifying investments within two years of initiating the plan. State payment on the R&D ITCs could begin in 2013 when, under iron-clad agreements between each Investor and the State, five annual payments of \$200 million will be exchanged for the R&D ITCs on qualified investments full committed between 2010 and the deadline. As a result of the new economic activity these investments generate, the state will receive significant additional new tax revenues; these are revenues the government would not receive without these investments. Thus adopting this policy ***creates no burden*** on Connecticut taxpayers, while the companies are able to access their R&D ITCs, tax credits they earned in good faith.

REMI

Deploying Unused R&D ITCs

The investment of a billion dollars of R&D ITCs as contemplated by the Tax Credit Legislation creates a direct construction stimulus, followed by enduring operating impacts from each of the investing industries. This section defines construction and operating stimuli together with indirect and induced impacts, first for the CT economy, then for State government. It demonstrates that this policy clearly stimulates significant recovery in the state economy and generates sufficient net new state tax revenues⁵ to fully repay investors over the years 2013 to 2017. Indeed, the analysis reveals that this approach generates annual surpluses in tax revenue, permitting payment of modest amounts of interest back to the investors to compensate for the deferred recovery of the R&D ITCs!

Allocations of Activities

As modeled using REMI, this analysis allocates the billion dollars of investments across four industries, with shares shown in parentheses:

1. Pharmaceutical (33%)
2. High-Tech (33%)
3. Biotechnologies (16.67%)
4. Insurance (16.7%)

Investments are spread geographically, based on industry shares in the three leading CT counties; Table 1 shows the investments by county in millions of dollars. Three of the industries are primarily located in Fairfield, New Haven, and Hartford counties, with New London replacing Hartford for pharmaceuticals.

⁵ That is increased revenues net of incremental state expenditures arising from the expansion.

Table 1: Non-Leveraged Direct CT Stimulus by Funding Industry and County (2010 Millions \$)

Industry\County	Fairfield	New Haven	Hartford	New London
Pharmaceuticals	144.1	85.6		103.6
High-Tech Manu.	126.6	78.8	127.9	
Biotechnologies	69.5	41.5	55.7	
Insurance	32.7	13.1	120.9	
Total	\$372.9	\$219.1	\$304.5	\$103.6

In addition, the analysis divides the investments in each industry between construction and the cost of equipping the building, i.e., machinery and equipment (M&E). Construction includes HVAC, wiring and plumbing; M&E is industry-specific, including shares of qualified components, based on national shares of M&E annual investments consistent with industrial categories in REMI. This process allocates the investments in construction at \$495.4 million, the remainder in M&E. As Tables 2 and 3 show, the four industries vary considerably in their shares of investment in plant and M&E. These results reflect the current geospatial distribution among counties, but the analysis easily accommodates locating these investments in other counties; such relocation would have minor implications for state-level economic and fiscal impacts.

Table 2: Direct CT Construction Stimulus by Funding Industry and County (Millions \$)

Industry\County	Fairfield	New Haven	Hartford	New London
Pharmaceuticals	82.3	48.9		59.2
High-Tech Manu.	65.2	40.6	65.8	
Biotechnologies	22.1	13.2	17.7	
Insurance	15.6	6.3	57.7	
Total	185.2	108.9	141.2	59.2

The analysis allocates Investments over time, with construction, including planning and site preparation, occurring in 2010 (25%) and 2011 (75%), with M&E being put in place during 2011 (40%) and 2012 (60%); the analysis assumes on average completion by mid-2012. Because investors will pursue multiple projects flowing from this policy, construction and installation of M&E will finish sooner on some projects than on others, resulting in considerable overlap among participants during construction and installation of M&E. In addition, startup dates among projects are likely to be different, so that the transition from construction employment to operating employment is smoother for the analysis as a whole than for a single project scenario. This investment schedule is aggressive.

Table 3: Direct CT M&E Stimulus by Recipient Industry and County (Millions \$)

Industry\County	Fairfield	New Haven	Hartford	New London
Computers	11.6	4.5	14.8	2.4
Software	79.9	32.6	83.6	16.3
Communications equip	4.4	2.2	5.3	0.4
Other electronic	23.6	6.7	15.1	8.6
Fabricated metal	4.4	0.9	1.4	2.1
Machinery	69.9	25.9	43.2	19.6
Trucks	1.7	0.7	5.1	0.1
Furniture	6.2	2.8	8.6	0.8
Total	201.7	76.2	177.1	50.4

While dollars invested determine construction and M&E employment, there is no such connection with operating employment. The analysis projects operating employment based on national 2008 employment to capital stock ratios for each industry, reduced by the annual rate of change in Connecticut’s overall employment to capital stock ratio of -3.5%, estimated over the last 4 years. Because the last two of these were recessionary years, this process may cause a slight downward bias in employment estimates. The analysis uses the industry estimates of operating employment⁶ as the initial direct impact that drives the REMI model. It apportions that impact among the counties consistent with their current industry shares and the investments made in each.⁷ The REMI model gives the results measured in incremental or net new jobs, both part-time and full-time. Taking part-time jobs into account, each direct job generates 1.308 incremental jobs, based on the Bureau of Labor Statistics (BLS) usage.

The Direct Shock

For REMI modeling purposes, the analysis defines the construction shock in millions of fixed 2000 dollars. Because of continuing productivity improvements in the affected construction and M&E, investment costs in 2000 dollars are higher than in current dollars, as Table 4 shows by county and for CT as whole.

⁶ Technically, BLS based employment estimates were translated in to REMI job estimates by using the 2008 average for such conversions, a multiple of 1.308286. Anyone wishing to convert the jobs results to employment should use the same proxy in reverse. “Employment” references BLS data and “Jobs” for REMI data.

⁷ When both investment and employment data are used simultaneously in REMI, the model requires that Investment induced by the additional employment be backed out of the estimates; this analysis made those adjustments.

Table 4: Direct Annual Construction Phase Shock by County and Connecticut (Millions 2000 \$)

Direct Shock	2010	2011	2012	Total
Fairfield				
Construction	48.7	146.3	0.0	195.1
Machinery & Equipment	0.0	90.4	135.5	225.9
Total	48.7	236.7	135.5	421.0
New Haven				
Construction	28.7	86.1	0.0	114.8
Machinery & Equipment	0.0	34.1	51.1	85.2
Total	28.7	120.2	51.1	200.0
Hartford				
Construction	37.2	111.6	0.0	148.8
Machinery & Equipment	0.0	78.3	117.5	195.8
Total	37.2	190.0	117.5	344.6
New London				
Construction	15.6	46.8	0.0	62.3
Machinery & Equipment	0.0	22.7	34.1	56.8
Total	15.6	69.5	34.1	119.2
Connecticut				
Construction	130.1	390.8	0.0	521.0
Machinery & Equipment	0.0	225.5	338.2	563.7
Total	\$130.1	\$616.3	\$338.2	\$1,084.7

Based on ratios of national employment to capital stock for each industry, Table 5 shows how direct employment increases in each industry, by county and for the state. The analysis assumes that, after 2013, the industries retain this increased employment.

Table 5: Direct Annual Operating Shock by County and Connecticut (Jobs)

Industry	Fairfield		New Haven		Hartford		New London		Connecticut	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Chemical Manu. Ex. Petroleum, Coal, Plastics and Rubber	404	809	238	475	330	660	112	225	1,084	2,168
Computer and Electronic	391	782	230	460	319	639	109	217	1,049	2,098
Transportation Equip, Manuf. ex. Vehicles	428	856	251	503	349	699	119	238	1,148	2,295
Food Manuf.	209	417	123	245	170	341	58	116	559	1,118
Paper	203	405	119	238	166	331	56	113	544	1,087
Professional and Technical Services	492	983	289	578	401	803	137	273	1,319	2,637
Insurance Carriers and Related Activities	904	1,808	531	1,062	738	1,476	251	502	2,424	4,848
Total	3,030	6,060	1,780	3,560	2,474	4,948	842	1,684	8,126	16,253

CT Economic Impacts

Indirect impacts swell the total impact, generally captured within state supply chains of the target industries, and by induced impacts arising from individuals and companies spending their incomes resulting from total construction and operating activity as well as population movements resulting from new opportunities in CT. Among the key economic indicators are income measures, i.e., CtRGDP and real personal disposable income (RPDI), as well as total jobs, related demographic shifts in the labor force, and population. The next section discusses fiscal impacts in more detail. Increased CtRGDP captures the impacts on total economic output prior to depreciation. Increases in RPDI capture the expansion of individual choice flowing from economic growth.

Income indicators

Implementation of the Tax Credit Legislation will augment CtRGDP by \$6 billion by 2013 with ongoing sustained development thereafter as Chart 5 shows. After taking tax and personal income shares of the increased output into consideration, the impacts on CT RPDI in 2013 reach \$1.8 billion with further growth to come.

Employment impacts follow a similar pattern, as Chart 6 shows. Given seasonally adjusted employment in 2009Q4 at annual levels of 1,619,000, the addition of 36,900 jobs by 2013 offers a major recovery from current serious unemployment, social malaise, and underutilization of human resources.

Chart 5: Connecticut RGDP and RPDI Impacts (Fixed 2000 Billions \$)

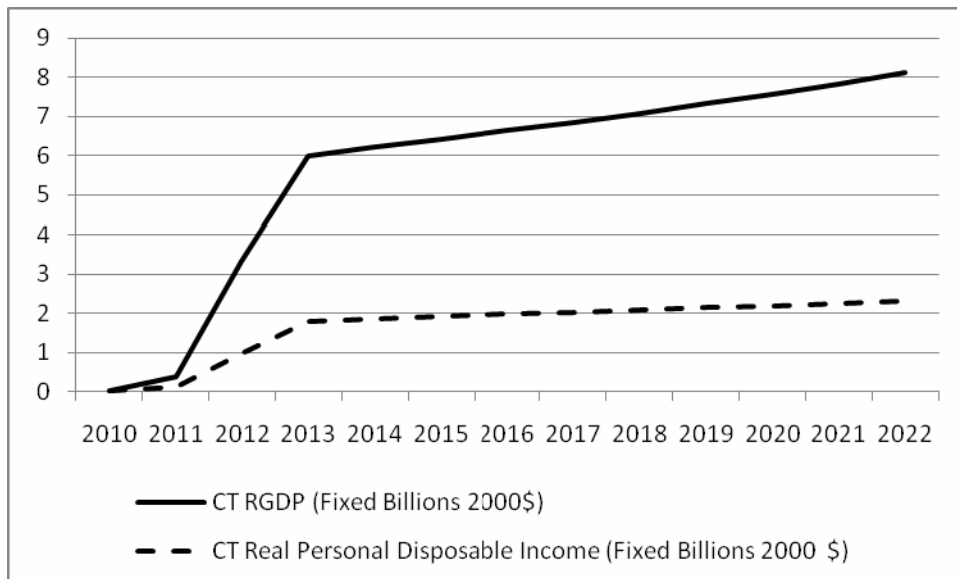


Chart 6: Job Impacts (1,000s)

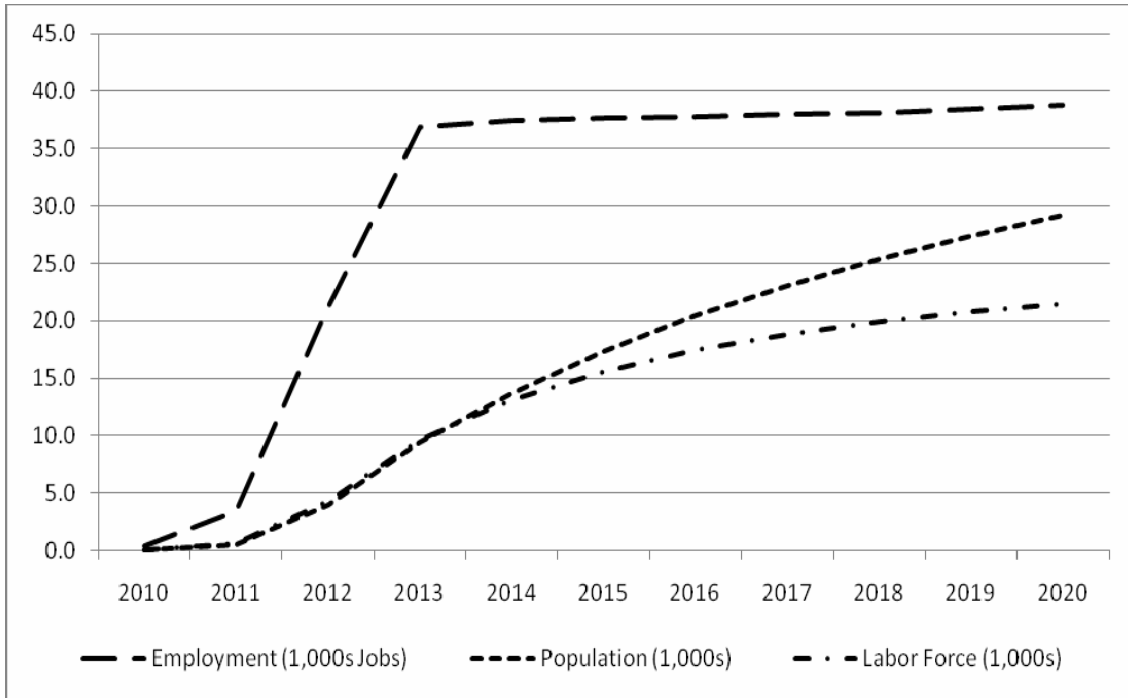


Both indicators point to quick, strong results from the implementation of the Tax Credit Legislation. In essence, the proposed policy quickly mobilizes private sector resources that powerfully redress the agony that the prolonged underperformance of Connecticut's economy is inflicting.

Labor Force Shifts

Job expansion encourages population to remain in Connecticut and/or move into the state to take advantage of the job opportunities, so adoption of this approach impacts positively both population and labor force participation. Chart 7 captures the resulting implications for employment, labor force, and population growth. Growth in employment initially outpaces that in the labor force, assisting a decline in CT unemployment. As operations in these relatively high-paying industries become more established, the rate of labor force growth drops off. The opposite is true for population growth, as relatively young workers retained and initially attracted start families. All these factors impact both state revenues and expenditures.

Chart 7: Labor Force and Population Changes (1,000s)



Fiscal Impacts

State and local governments benefit from the expansion in tax bases these investments generate. This includes direct impacts on the Grand List in host municipalities and from induced demands for housing, and increased incomes resulting from improved personal and corporate incomes, swelling collections on personal, corporate, and sales taxes. Governments also face increased expenditures as additional employment opportunities retain and attract population, which also leads to additional family formation. This analysis feeds the REMI results into the CCEA’s state fiscal model⁸ to project annual fiscal impacts. This yields annual impacts on State revenues and expenditures in nominal dollars, taking both real growth and price impacts into account.

Lines 1-3 of Table 6 show fiscal impacts on annual State revenues, expenditures, and the net of the two before redeeming any R&D ITC. The fourth line gives the cumulated net revenues before redeeming R&D ITCs. Line five shows the repayments of \$200 million per year, starting in 2013, with no interest charges; line six gives the net surplus revenues remaining with government after those payments.

⁸ CCEA, jointly with DECD, developed and maintains a fiscal impact for the state and each of its municipalities. This model provides the average per capita cost for all elements of state and municipal services; because it necessarily relies on average costs of government services, it overstates the actual increase in the cost of services. There is no basis on which to calculate the marginal cost of these services, which is systematically lower than average costs, and it ignores the potential scale effects in providing increase municipal and state services.

Table 6: Incremental Annual and Cumulated State Fiscal Impacts (Millions of Nominal \$) 2010-2020

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Gross New Tax Revenues (Millions \$)	3.5	29.4	235.3	441.6	476.3	504.7	530.7	555.9	581.3	607.5
2	Incremental Government Expenditures (Millions \$)	0.5	4.1	30.2	72.7	108.7	140.5	169.2	195.3	219.5	242.0
3	Net New Annual Tax Revenue	3.0	25.4	205.0	368.9	367.7	364.2	361.6	360.7	361.8	365.5
4	Cumulative Net New Tax Revenue	3.0	28.3	233.4	602.3	969.9	1,334.2	1,695.7	2,056.4	2,418.2	2,783.7
5	Payment on R&D ITCs				200.0	200.0	200.0	200.0	200.0		
6	Cumulative Net New Tax Revenue after Payment of ITCs	3.0	28.3	233.4	402.3	569.9	734.2	895.7	1,056.4	1,418.2	1,783.7
7	Payment of Interest				75.9	103.8	111.7	98.2	61.6		
8	Payment of R&D ITCs + Interest				275.9	303.8	311.7	298.2	261.6		
9	Annual Net with Interest	3.0	25.4	205.0	93.0	63.9	52.5	63.3	99.1	361.8	365.5
10	Cumulative Net New Tax Revenue after Payment of R & D ITCs + Interest	3.0	25.4	233.4	326.4	390.2	442.7	506.1	605.2	967.0	1,332.5

“*” Assumes interest rate of 5% starting at the average completion date of July 1, 2012 with annual payments made on Dec. 31.

This table illustrates that the investments, assuming they are fully utilized by hiring at the average level of employment relative to the new capital stock, generate for Connecticut state government net new tax revenues (after paying for additional public services for in-migrating population) sufficient to cover fully the five annual \$200 million refunds on R&D ITCs. Moreover, by the end of 2017, the State of Connecticut will accumulate net new revenues of \$1.056 billion as a result of implementing this policy. In two additional years, after refunds end, the state will have gained nearly \$1.8 billion in cumulative tax collections, with net revenue continuing annually at more than \$365 million.

Alternatively, the state, to accelerate investment activity and drive economic recovery, may wish to offer to pay modest interest (5%) on the billion dollar investment commitment, net of payments made by the state to redeem the R&D ITCs. Such a process encourages the State to make the redemptions sooner, and significantly strengthens the attractiveness for investors. In this example, the State’s net accumulated additional revenues reach \$605 million. Alternative simulations show that the State secures annual net benefits through 2017 for any interest rate below 7%.

As Table 6 reveals, the State may be able to accumulate surpluses during 2010 and 2011, permitting offset of the first ITC refund at the end of 2012. This strategy would save the State interest and payback investors sooner. It would advance the state’s last payment by a year, so the 2017 accumulated benefit would be \$771 million, well above the \$605 million generated with refunds beginning in 2013.

Investor Impacts

The impacts on investors are not as generous as they appear because the above calculations do not include investors’ costs of capital. To estimate these costs, CCEA has discounted the value of redeemed

R&D ITCs to mid-2012, when, on average, construction is complete. Using blended costs of capital to businesses of 15%, Table 7 shows net present values (NPVs) of redeemed R&D ITCs to investors, differentiated by the level of interest the State pays on those R&D ITCs remaining to be redeemed and the starting time for the redemptions. The differences between these numbers and one billion dollars constitute the NPV of the companies' investments in the State's recovery under the alternative interest rate strategies on unredeemed R&D ITCs.

Table 7: NPV of Redeemed R&D ITCs (Mid 2012, Millions \$)

Interest Paid by the State on Unredeemed R&D ITCs (percent)	NPV Payments Commencing End of 2013	NPV Payments Commencing End of 2012
Zero	625.2	719.0
Five	909.3	918.0
Seven	1,031.8	1,001.8

With no interest payments by the state on unredeemed R&D ITCs and with redemptions starting at the end of 2013, R&D ITC redemptions represent less than the 65% refunded to small business for their R&D ITCs. Commencing payments at the end of 2012 or paying interest on them enhances NPV returns to business. If net redemptions start at the end of 2012 and the unredeemed portions pay 7% interest, net new revenues would match the cost to the state. This then is the breakeven point, assuming investors' internal cost of capital is 15%.

Conclusions

The advantages of this proposal are that it builds on Connecticut strengths and anchors firms in the state, thereby contributing to sustained growth. Furthermore, it can be financed from revenues that would not be generated without the project and restore goodwill between the state and leading firms. Projections indicate that adoption of this policy fairly quickly solves about a third of the current unemployment malaise, far more than other relatively minor proposals. It harnesses the will of local leading companies and improves the government's long-term fiscal position rather than weakening it. And in fundamentally changes the use of tax credits from merely rewarding past behavior to using the credits to drive major investments that will dramatically strengthen Connecticut's economic future.