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RESTORING THE U.S. TRADE BALANCE

How lessons from emissions trading can inform the Buffett proposal

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The case for closing the deficit

The current accounts deficit- the broadest measure of all goods, services and income transactions- reached a high of 6.1% of GDP in 2006, totaling $803 billion. In 2007, the deficit fell slightly, but it was nowhere near the surplus enjoyed in the postwar period, nor was it comparable to the previous three decades (**Figure A**). In fact, the deficit in 2007 was more than double the average deficit between business cycle peaks in 1979 and 2000 (5.3% vs. 2.0%).

While the U.S. had a $104 billion *surplus* on trade in services, income, and transfer payments in 2007, it also ran a goods trade deficit of $831 billion that equaled 114% of the overall U.S. current account deficit.[i] The goods trade deficit is simply too large to be offset by net services trade and income flows in the foreseeable future.

Government officials and leading economists alike have vocalized their concern that U.S. current account deficits were unsustainable. They could lead to a rapid fall in the dollar, a sharp rise in interest rates, and a drop in growth, generating a hard landing for the economy. As early as 2002, Kenneth Rogoff (then IMF Director of Research) noted that "The U.S. current account [deficit] is a global issue…and could lead to a sharp realignment of exchange rates" (Rogoff 2002). Alan Greenspan argued in 2005 that U.S. current account deficits "could not widen forever" (Greenspan 2005). The man who would succeed him, Ben Bernanke, argued that a "global savings glut" had contributed significantly to the growth of U.S. current account deficits (Bernanke 2005). Edwards (2005) concludes that "future adjustment of U.S. external accounts is likely to result in a significant reduction in growth".

The U.S. trade and current account deficits fell sharply in late 2008 and 2009, as the U.S. and global economy slipped into the deepest recession since the Second World War. However, Bertaut, Kamin and Thomas (2009), in a recent report published in *IMF Staff Papers*, project that the U.S. "current account deficit will resume widening and external indebtedness will continue to expand." While these authors and others (e.g. Greenspan) believe that when the limits of foreign borrowing are reached, adjustment of the exchange rates and current account deficits need not result in a hard landing for the economy, many others are not so sanguine. Changes in U.S. trade, industrial, and exchange rate policies must also work to restore the U.S. current account flows to balance.

Several years ago, Warren Buffet (2003) outlined a new policy proposal to radically stimulate essential, goods-producing sectors of the U.S. economy, particularly domestic manufacturing industries. This would be achieved by systematically reducing or eliminating U.S. current account deficits. Buffett proposed to give import certificates (ICs) to exporters in exchange for each dollar's worth of goods produced domestically and sold abroad. Exporters could retain those certificates for their own use (to purchase imports), or sell them in a special commodity market for ICs. Surplus certificates would be sold at market value to importers, or to foreign exporters wishing to sell goods in the United States, acting as a type of quota-license for firms wishing to sell foreign goods in U.S. markets. The total supply of ICs would constitute a national quota on imports. The

ICs would sell at a premium (perhaps 10% over their face value, according to Buffett) given the higher demand of imports than exports.

Buffet argues that such a broad-based system is more likely to achieve trade balance than increasing tariffs or setting quotas on specific products. The IC Program manages to leverage elements of both tools by tying imports to the level of U.S. exports. It restricts import levels to those equivalent to U.S. exports (without naming a specific quantity), and it requires the importer to obtain an IC (without naming a specified price). The volume of exports and imports, as well as the value of the IC, are all determined in private markets. The IC is, according to Buffet, "a tariff that retains most free-market virtues neither protecting specific industries nor punishing specific countries nor encouraging trade wars." In fact, other countries have used such broad-based tariffs or quotas to reduce trade deficits in the past (Stewart and Drake 2009). Assuming that such a program is implemented successfully, the U.S. trade deficit would be drastically reduced if not eliminated.

The IC plan responds to the U.S. deficit in both the short and long term. First, the profits from selling the ICs would provide the impetus for U.S. industries to expand production and, subsequently, labor demand. This would circulate spending back into the domestic economy at a time when unemployment is at its highest in over 25 years, reaching 10.2% in October, 2009 (Shierholz 2009). Second, it allows U.S. consumers to be less dependent on foreign imports. Finally, it reduces U.S. reliance on foreign capital inflows to finance trade deficits, reducing risks of a sudden dollar collapse and a further jolt to the economy.

A version of the Buffett plan introduced as draft legislation by Senators Byron Dorgan and Russell Feingold (S. 3899) would gradually eliminate the U.S. trade deficit by steadily shrinking the supply of ICs relative to the volume of U.S. exports. Initially, each dollar's worth of exports might generate 1.4 or 1.5 ICs, allowing the total volume of imports to exceed exports by 40% to 50%. This IC "multiplier" would decrease gradually, for example by 10 percentage points per year (0.1 units) until trade balance was achieved. Note that the actual volume of imports each year would depend on the level of exports. If exports increased 10% or more per year and the IC multiplier fell ten percentage points per year, then imports would grow along with exports, though at a slower rate, until trade balance were achieved after four or five years. Import growth would occur in this scenario because more ICs would be created through the growth of exports than would be lost through the shrinkage of the multiplier (since each dollar's worth of growth in exports would generate 1.x dollars worth of new import ICs).[ii]

The IC Program, as proposed by Buffett, would by definition achieve its objective of eliminating the trade deficit. IC prices, on the other hand, would be indeterminate and subject to market forces which would set the market-clearing IC price as a function of IC demand.

The purpose of this paper, however, is not to endorse the use of ICs. Rather, the paper examines one potential area of concern about the program in order to best inform present

and future policy debate: the price uncertainty of the ICs. Price uncertainty, and accompanying volatility, could result from the following: 1) gradual reductions in the supply of ICs, relative to exports; 2) hoarding of ICs; 3) changes in exchange rates; and 4) changes in import prices (IC absorption or pass-through). This paper draws on the literature regarding policy designed to address climate change.

First, the paper explains the legislation as it was proposed to the Senate in September of 2006. It then examines the potential concerns named above, by outlining the best practices of existing policy instruments that have been used to mitigate price volatility in emissions trading. Lastly, the paper discusses how such instruments could be used to mitigate the price volatility of ICs without interfering with or inhibiting a firm's ability to perform, innovate and invest fairly and efficiently in the free market.

The Balanced Trade Restoration Act of 2006

Warren Buffet's proposal was adapted to legislation and introduced to the Senate on September 14, 2006 as the "Balanced Trade Restoration Act of 2006" (S.3899). The Act was co-sponsored by Senator Byron L. Dorgan (D- North Dakota) and Senator Russell D. Feingold (D- Wisconsin). S. 3899 was referred to the Committee on Finance but not reported out of Committee.

The legislation has one fundamental purpose: "to create gradual balance between the dollar value of goods imported into the United States and goods exported from the United States."[iii] It would do so by requiring importers to buy import certificates from exporters (indirectly or directly) at market value. As explained above, these certificates are allocated to exporters in proportion to the value of each person's or firm's exports sold abroad.

How it would operate currently

Distribution of Certificates. Under Sections 4 and 5 of the proposed Balanced Trade Certificate Program (established within the International Trade Administration of the Department of Commerce, in cooperation with the Department of Homeland Security), ICs would be issued to the exporter, collected from the importer, valued and traded. Once collected, the Certificate will be removed from circulation.

Value of Certificates. The quantity of certificates issued for each dollar's worth of exports would be gradually reduced over five years (ten years for oil or gas products)[iv]; equal to 140% of the value of exported goods the first year, 130% the second, 120% the third, 110% the fourth, ending with a dollar-for-dollar exchange after the five-year period. The value of the Certificate would be based on the appraised value declared on the Shipper's Export Declaration (SED), would be fully transferable, and would be valid for 365 days from the date that the Certificate was issued. The person or firm exporting goods could then use it for import purposes or trade it on the free market to an import firm or foreign exporter.

Enforcement. Should importers fail to submit a Certificate that is greater than or equal to the value of imported goods within 90 days of its entry to the U.S, the Secretary of Commerce, in cooperation with the Department of Homeland Security, would suspend the firm from importing any good until a Certificate is submitted. A fine would be imposed that would equal three times the value of the good imported.

Legality. The question remains whether or not it is legally possible to restrict trading partners' access to the U.S. market. As noted by Stewart and Drake (2009), the General Agreement on Tariff and Trade (GATT Article XII, wherein the World Trade Organization is established) "permits any member country to restrict the quantity or value of imports in order to safeguard the external financial position and the balance of payments of the member country."[v] In other words, countries may impose tariffs or quotas in order to correct a balance of payments crisis. One indicator of the extent of U.S. balance of payments difficulties is its net international debt position. At the end of 2008, the U.S. net international investment position was -$3.5 trillion, or 24% of GDP (Bureau of Economic Analysis 2009a and 2009b). The United States was the largest debtor country in the world.

The Balanced Trade Restoration Act provides an incentive for goods-producing industries in the U.S. to *expand* until the trade deficit is eliminated. If implemented accordingly, it would not only balance the deficit in the long-term, but it would also create jobs in the U.S. and offset the strain on the consumer in response to potential increases in import prices and reduced availability of imported products.

Concerns

Implementation of the Buffett IC Program itself may lead to some unintended consequences, but these can likely be offset through improved policy design. Concerns about price volatility stem from the concerns noted above, including increased scarcity of ICs over time, hoarding, changes in exchange rates and pass-through or partial absorption of the IC margin by exporters.

Papadimitriou, Hansgen and Zezza (2008) estimate that the proposed IC plan would raise the consumer cost of imported goods by about 9% at its outset by effectively using "incentive-based intervention" to stimulate U.S. exports. Spending may shift to domestically-produced goods as intended, and/or spending may be reduced altogether. They argue that the IC plan, as proposed, would simultaneously discourage imports by requiring import firms to purchase ICs. Thus, should the **price of imported goods rise**, it would be felt not only by individual consumers, but also by firms importing raw materials or intermediate goods.

Nonetheless, the supply of goods in the general market is not likely to decrease for two reasons. First, the IC plan creates incentives to increase exports, which will increase the supply of ICs available to purchase imports, relative to a baseline scenario. Second, increases in the prices of imported goods and intermediates will create incentives for increased domestic production of alternatives to those products. Under the Dorgan-

Feingold plan, the volume of imports and exports would adjust slowly, over a period of ten years, until trade balance would be achieved. This will provide time and incentives for domestic firms and exporters to adjust production and pricing accordingly.

Regarding the concern that **price volatility** of ICs in modern financial markets would discourage investment, there is room for improvement in the proposed Buffett and Dorgan-Feingold (DF) policy proposal. As demonstrated in current emissions trading programs, price volatility is an obstacle that has been identified in other models capping the quantity of sulfur dioxide, nitrous oxide and greenhouse gas emissions just as the Buffett and DF plans would "cap" imports here. These systems have no pre-set cap on emissions per se, but are able to adjust emissions within established markets, just as the quantity of ICs is linked to export production in the IC Program. However in doing so, both the pollutant permit and IC are exposed to pricing based on the current value of a particular good and expectations of its future worth. For this reason, we examine price volatility as it has been –and is being- experienced through cap-and-trade regimes currently, with the hope that it may inform present or future legislation that incorporates Buffet's proposed import certificates.

Emissions trading policy instruments and their applicability to ICs

The IC Program, like cap and trade models for greenhouse gas (GHG) emissions, are based on quantity restrictions. For ICs, this means that the quantity of imports would be "fixed" or "capped" in proportion to the value of U.S. exports. Under the Dorgan-Feingold alternative, IC limits would be phased in over time. In both cases, a futures market would inevitably emerge.

One potential drawback to IC trading proposals is that the price of certificates could be subject to severe fluctuation if U.S. exports should shrink in particular industries or overall (making ICs scarce and their value increase) or vice versa. In an environment where future output is unknown, it is difficult for businesses to project IC costs in the long-term and build this into their overall investment strategy, future production and inventories. In this case, the predictability and stability of markets is just as, if not more, important than the actual price of ICs.

Some policy design features can be used to smooth market price fluctuations, and have proven more efficient than a cap alone.[vi] They include the following: banking certificates for future use –presumably when the demand is low for that particular good-, borrowing certificates for present use, and/or including a safety valve (or price ceiling) on ICs – when demand is high.

***Banking and Borrowing: A* "cushion against adverse cost shocks"[vii]**

Should too many ICs be in the market at any given time, **banking** can be used as a tool to keep the price of ICs from falling too low. Banking enables exporters to hold on to their ICs with the expectation that they would yield a better return in the future once present market conditions improve. Banking would tend to stimulate exports, especially at the outset of the Program, by allowing importers to accumulate a surplus early and hedge against the uncertainty of IC prices going up as IC limits became tighter. Exporters could also bank ICs for sale at a later date, speculating that their price would rise.[viii]

One of the most well-known examples of banking is under the Emissions Trading System (EU-ETS) of the European Union, established in 2003, and effective in 2005, discussed more below (see also Convery and Redmond 2007) This system developed in two phases; the first from 2005 to 2007, and second from 2008 to 2012. Towards the end of phase one in 2006, the price of allowances fell rapidly, in part due to banking *not* carrying over between first and second phases. Due to an anticipated surplus, firms "unloaded" their surplus allocations and flooded the market. The value of allowances plummeted and in 2007, fell to zero.

ICs could be subject to similar price volatility since each certificate would expire after 365 days in the Dorgan-Feingold bill (S 3892 Sec.5 (c)). As an alternative, firms could be allowed to bank certificates for a more extensive period of time in order to stabilize IC pricing.

Another preventative measure for avoiding a sudden price devaluation of ICs is setting a minimum **price floor** on ICs. This could be accomplished by having the government purchase surplus ICs and depositing them into a public IC bank. The government could profit from this investment if their ICs were resold later at higher prices. However, there would also be downside risks for the government if IC prices fell or the ICs expired before being sold.

Several authors (see Papadimitriou, et al 2008, and Blecker 2009) have recommended alternative proposals under which the government would auction ICs directly to importers and foreign exporters wishing to sell goods in the United States. This model would easily enable the government to set a price floor for ICs by controlling their supply directly. However, this would deny domestic exporters the incentive generated from granting them ICs in proportion to their total export sales. Thus the burden of trade balance adjustment would be largely import-led, and domestic production may lag.

Alternatively when ICs are scarce, **borrowing** allows firms to use or purchase ICs when IC prices rise, thus preventing the selling price of ICs from rising so high that only a few firms would be able to purchase them. The 365 day shelf-life of ICs is less of a problem in borrowing, simply because exporters would typically borrow with an intention to trade or sell them in the short-term. However, borrowing may only be as effective as forecasted prices are accurate, and could serve to exacerbate price fluctuations instead of deter them (ie should IC prices continue to rise despite borrowing, it would be more difficult to "pay" them back). That said, the option to borrow could quell price spikes

under some circumstances, but may not be as effective at doing so, nor as straightforward to implement, as a direct, government safety valve mechanism.[ix]

With a shortage of ICs on the market, a **safety valve** would put a ceiling on their price by requiring the government -in this case the Commerce Department- to distribute a sufficient number of certificates to stabilize IC prices at a predetermined value. This feature, if activated, would delay the achievement of trade balance within the time period set. However, the benefits of its implementation may outweigh its risks, especially when dealing with a new experiment in trade regulation.

Price volatility in emissions trading: Lessons learned

Should a trade proposal using ICs be considered, the mitigation of price volatility is a significant concern, but as discussed above, is not altogether uncontrollable. Although early experience with cap and trade systems suggests that there may be some cause for concern, recent experiences suggest that damaging price fluctuation *can be* curtailed simply through careful design of the policy instrument(s).

Cap-and-Trade Programs in the United States[x]

- Banking was successfully implemented in the Acid Rain Program (effective since 1995) as part of the Clean Air Act Amendments administered by the Environmental Protection Agency (EPA). Its goal was to reduce emissions of sulfur dioxide (SO_2) to levels in the 1980s by issuing tradable permits for sulfur dioxide emitted from large electric power units in the U.S. However, in a 2007 publication, William Nordhaus found that the price of sulfur dioxide allowances was more than twice as volatile annually as stock prices (based on S&P 500 index) between 1995 and 2006. "Banking provisions contributed to the program's cost-effectiveness, but the free allocation of allowances did not," as it was harder to affect the cost of achieving a cap.[xi] It was argued that the model prevented potential profits that could be acquired from selling the allowances from being used to reduce existing taxes and to spur economic activity.[xii]

- The NO_x Budget Trading Program (effective since the late 90's), also permitted allowances to be banked. The Program is a multi-state initiative that caps nitrous oxide emissions from large industrial boilers and electric generators in 19 states and the District of Columbia. States allocate emission allowances while the EPA tracks and records compliance.

- Regional Clean Air Incentives Market, or RECLAIM, (effective since 1994) is a local southern California effort to cap both nitrous oxide and sulfur dioxide emissions in order to reduce urban air pollution. Banking is not explicitly permitted, due to concern that it would lead to unacceptably high emissions. The decision not to allow banking, however, is blamed for the large price spike seen in

nitrous oxide emission credits that occurred in the summer of 2000, when a heat wave caused demand for electricity to soar (sulfur dioxide credit prices remained relatively stable). However, there are overlapping RECLAIM trading credit *cycles*, in which firms must use their credits within a year´s time. Because facilities are assigned to separate cycles, consumers and facilities alike are guarded against dramatic price swings that may occur if all credits expire at the same time. Therefore, the 6-month overlap provides limited opportunities for banking into the next cycle.[xiii]

- Another initiative currently being developed in the U.S. to restrict greenhouse gas emissions via a mandatory, market-based system is the Regional Greenhouse Gas Initiative (RGGI). RGGI is an effort of ten states in the Northeast and Mid-Atlantic to begin capping CO2 emissions in 2009 from the electric power generation sector with the goal of reducing emissions by 10% by 2018.

The EU-ETS

The European Union's Emission Trading Scheme (EU-ETS) is the broadest example of a functioning, market-based, cap and trade system. In 2006, $23 billion in allowances (1 allowance per ton of emissions) were traded. The initial "pilot" phase was effective from January 2005 to 2007, and it is being followed by a 2nd phase from 2008 to 2012 that covers 12,000 sources of carbon dioxide emissions in 27 countries, with plans pending for Iceland, Norway and Lichtenstein.

To assess the price volatility experienced during the Phase I period (2005-07), it is helpful to look at how the market evolved. As futures markets emerged in 2004 prior to the start of EU-ETS in 2005, trade volume increased dramatically. Broker participation increased when a Norwegian company, Point Carbon, began tracking market developments and pricing of the EU-ETS allowances.[xiv] Markets and brokers met the demand of managing risk, information, and futures trading across firms and time periods at relatively low cost. It was suggested that "these situations tend to arise quickly and inexpensively but there is generally some risk of excess volatility, especially in the early phases of implementation."[xv]

Indeed, prices surpassed all expectations in the first year until historical emissions data (from 2005) were disclosed in the spring of 2006, and prices fell. This was largely attributed to evidence of a surplus of allowances, either by over-allocation or the reduction of emissions as a result of improved investments in energy efficiency (the data showed lower emission levels than originally believed and therefore diminished the need to purchase additional allowances). In addition to the release of the 2005 emissions data, the fall of prices coincided with one other event, more relevant to the purposes of this paper: the decision not to allow the banking of allowances into Phase II of the EU-ETS, per the Kyoto agreement.

Banking was possible within either phase of EU-ETS, but each member state was allowed to decide whether or not to participate and how. For the second phase (2008-2012) and thereafter, however, each member *must* allow banking. Prices are currently trading around 10 to 20 euros per one EU allowance, equivalent to one metric ton of carbon dioxide emissions. It is generally believed that trading will continue even after Kyoto phase II ends in 2012.

The option to auction[xvi] always existed as part of the EU-ETS (5% in the first phase, 10% in the second), but few countries have yet chosen to take advantage of it. Those that did were rewarded with a rate similar to the going market value. Further discussion by the European Commission on auctioning allowances is pending per a January 2008 proposal, and it may create a much more central role for auctions in allowance trading (upwards of 60%) as early as 2013.

Conclusions and recommendations

This paper has demonstrated that several policy instruments can be used to mitigate price volatility in a cap-and-trade system without interfering with the private sector's ability to perform, innovate and invest fairly and efficiently. Some are inevitably more applicable than others in the context of the currently-proposed IC Program. Below is a brief selection of those instruments that could contribute substantially to the IC Program´s success if executed responsibly and in conjunction with more extensive research on its legal, economic, and (most importantly) practical implications.

Banking and Borrowing

Flexible cap designs like banking and borrowing would provide additional stability to the market and help avoid price volatility. Though absent in the initial legislation, these policy instruments would enhance the effectiveness of the Program and its ability to smooth IC supply and demand over time.

Banking, specifically, would necessitate a longer shelf-life for ICs. The 365-day certificate life specified in the Dorgan-Feingold bill should be extended to allow firms to bank ICs in order to increase price stability.

Additionally, safety valves and (to a lesser degree) price floors merit consideration as part of an IC Program. While the implementation of a safety valve on ICs (perhaps in addition to or in place of borrowing) is recommended if prices become too high, a price floor would require at least minimal restructuring of the IC Program.

Auctioning

Direct auctioning of all *ICs* by the Commerce Department (rather than granting them to exporters) is a significant alternative to the Buffet and Dorgan-Feingold plans. Papadimitriou, Hannsgen and Zezza (2008) propose that the government use auction proceeds to offset payroll taxes for U.S. workers and companies.

Positive results of auctioning ICs include equity, access and reduced threats of WTO challenge. Auctioning would eliminate the accrual of windfall profits by existing exporters. Auctioning would also make it easier for importers and startups to obtain ICs, and might lessen the risk of hoarding, though it would not eliminate the risk of speculative IC investments. Direct auctioning may also reduce the threat of a WTO challenge to the IC program. Under WTO codes, granting valuable ICs to exporters could be challenged as an export subsidy and hence subject to countervailing duties by other member countries (Blecker 2009; Stewart and Drake 2009).

However, it should be noted that IC auctions would lack the advantage of export incentives provided to domestic firms, in direct proportion to the amount of goods produced and sold abroad. Thus, the entire burden of trade adjustment would fall on imports under an IC auction. Such plans would be more contractionary for the domestic economy than the Buffett or Dorgan-Feingold plans, because they would raise the costs of imports, but would not (directly) incentivize export production.

Enforcement, transparency, and effectiveness

While there are significant differences between trading emissions allowances and trading ICs, many of the same concerns apply. In order for new emissions or trade regulation programs to perform optimally, they must be transparent in terms of its administration, accessibility and enforcement.

First, contrary to a tax, these programs necessitate the creation of a "new administrative infrastructure" to track transfers and the emergence of additional institutions for IC trading to function smoothly.[xvii] Without accurate, reliable systems in place for reporting emissions or trade flows, prices will likely fluctuate more than necessary, just as they did in Phase I of the EU-ETS. Trade flows are already well regulated and reported through the U.S. Customs Service.

Second, the Department of Commerce must ensure and *maintain* easy access to information on the distribution and value of ICs for exporters and importers alike. A consistent flow of information will be vital in order to maintain acceptable levels of price stability in the IC Program, especially if banking and borrowing are used to complement firms' production and efficiency over time.

Lastly, compliance must be monitored and enforced, and IC distribution must be simple, transparent and equitable. Such measures increase the probability that participants are

educated about the IC Program's operation and are therefore able to make strategic decisions about the Program's features to "ensure a liquid market within and across time periods, to moderate volatility and promote innovative behavior."[xviii] Ultimately, according to the testimony of Trading Manager of Shell Oil in 2007, "…the point of an emissions trading system is to give companies the necessary information to allow us to allocate capital in the most effective way to *deliver the required…results…*"[xix]

It would be no different for the IC Program.

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Additional resources

EPA resources

- General listing of cap and trade resources: http://www.epa.gov/airmarkets/resource/cap-trade-resource.html
- On allowance trading for EPA´s Clean Air Market Programs: http://www.epa.gov/airmarkets/trading/index.html
- "An Overview of the Clean Air Incentives Market", The Environmental Protection Agency http://www.epa.gov/airmarkets/resource/docs/reclaimoverview.pdf .

Point Carbon: http://www.pointcarbon.com/

[i] The income account includes net income on foreign investments, net wage payments to workers abroad plus transfer payments and remittances.

[ii] Note that if the volume of exports fell (for example, during a recession), then the supply of ICs would fall even faster. Blecker (2009) has expressed concern that this process could lead to a destabilizing contraction in trade flows. However, rapid shrinkage of trade deficits is a normal consequence of business cycle downturns, as illustrated in the recession of 2008-09 (figure A).

[iii] S.3899, Section 4 (a): Establishment of Balanced Trade Program.

[iv] Importers of oil and gas would be required to present import certificates beginning in the sixth year of the program, starting at 60% of the value of shipment. This ratio will graduate 10 percentage points per year, until 100% of ICs are required in the tenth year of the Program. Thus, in the sixth year of the program U.S. exports of non-oil goods must exceed imports of non-oil goods by an amount equal to 60% of the appaised value of net oil imports. In 2008 the U.S. had a trade deficit of $800 billion, which included a $417 billion deficit on net trade in oil and gas products and a deficit of $388 billion on trade in non-oil products. Thus, inclusion of oil and gas in year six of the Dorgan/Feingold program could cause a sharp spike in the demand for ICs. The average price of imported oil was nearly $100/barrel in 2008, and fell to less than $50/bbl in the first half of 2009, dramatically cutting the U.S. oil bill. However, oil prices are expected to recover as the U.S. emerges from recession and the deficit in oil products would still be significant, relative to the total supply of ICs in year six of the Dorgan/Feingold plan, if implemented. The U.S. had total goods exports of $1.3 trillion in 2008 and goods imports of $2.1 trillion.

[v] See World Trade Organization, The General Agreement on Tariffs and Trade (GATT 1947), Article XII, paragraph 1. See also Stewart and Drake (2009) for an analysis of legal issues as they relate to the IC Program.

[vi] See CBO (2008), Chapter 1: "Efficiency Implications of Different Policy Designs" and Appendix A: "Current and Proposed Cap and Trade Programs in the U.S. and Europe". Efficiency refers to the ability of policy features to minimize costs and maximize the benefits of achieving a certain target (in this case, a trade balance).

[vii] Convery and Redmond (2007), p. 96.

[viii] See Kruger and Pizer (2004), page 18.

[ix] CBO (2008), p. xii..

[x] A useful synopsis can be found in CBO (2008) Appendix A, "Current and Proposed Cap and Trade Programs in the U.S. and Europe".
[xi] CBO (2008), p.23.
[xii] See Papadimitriou, Hannsgen and Zezza's (2008) corresponding critique. The authors propose to auction ICs to importers rather than granting them to exporters at "without charge" (p. 32). Revisited below.
[xiii] See "An Overview of the Clean Air Incentives Market", The Environmental Protection Agency http://www.epa.gov/airmarkets/resource/docs/reclaimoverview.pdf .
[xiv] Check www.pointcarbon.com. Also, a good reference for discussion on emergence of Futures Trading is Convery and Redmond (2007), pp.103-110.
[xv] Parry and Pizer (2007), p.85.
[xvi] See Papadimitriou, Hannsgen and Zezza (2008) for discussion on this point.
[xvii] CBO (2008). See Summary Table 1, "Comparison of Selected Policies for Cutting Carbon Dioxide Emissions". Any cap would necessitate this feature though a tax may not (carbon taxes could be operated through an existing tax infrastructure).
[xviii] See Kruger and Pizer (2004), page 15. Adapted directly from discussion on allowance trading.
[xix] Testimony of Garth Edward, Trading Manager of Environmental Products of Shell Oil, before the Senate Committee on Energy and Natural Resources, March 26, 2007. See United States Senate Committee on Energy and Natural Resources (2007).