PERCEIVED WELFARE EFFECTS OF CURRENT ACCOUNT DEFICIT – EVIDENCE FROM AMERICAN ECONOMY 1967 - 2005

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December, 2005

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December 2005
JEL Classification : F42, F16
Keywords : Current Account, Trade Liberalization

Abstract

The paper addresses the question, whether the increasing current account deficit has negative impact on American economy and society. Using data for American economy in years 1967 – 2005, it will be shown that perceived welfare effects, as measured by changes in Consumer Confidence, asymmetrically reflect changes in exports and imports. The provided VAR analysis allowed to filter out potential output and cyclical movements in endogenous factors and to describe the remaining error in terms of external trade volatility. Keeping information on exports and imports as external factors allowed to estimate a structure of the model, where the responsiveness of perceived welfare in respect to simulated changes in current account was studied. The provided analysis shows that opening the economy enhanced observed volatility of the Consumer Confidence, while presence of the current account deficit allowed to obtain superior welfare..

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I. Introduction

The under-valuation of any currency leads to an asymmetry in a price balancing mechanism. The relatively cheaper products start to flow into other countries, offsetting there domestic production. If this become an issue on a grand scale, it may raise concerns of domestic producers and employees. From the other side, inflow of cheaper products provides a positive substitution effect that allows consumers to attain higher level of consumption, which in turn leads to a superior welfare.

Empirical evidence of American economy for the last decade suggests that its performance could have been, at least to some extent, affected by a mechanism similar to that described above. The under-valued currencies within so called “Bretton Woods 2” mechanism made pressures on American legislation to make appropriate steps to prevent American producers from cheap imports. According to American manufacturing lobbyists, the undervalued currencies of main trade partners of U.S. (particularly Chinese Yuan) were among main reasons for tough time for U.S. economy. American manufacturers were suggesting to take immediate action by imposing retaliatory tariffs on cheap imports to U.S. In fact, the American economy, that has been experiencing stagnation since the upper turning point in March 2001, has not recovered yet. With the number of employees on a relatively low level, the stagnation has been strengthened by prosperous imports. In reaction to manufacturers pressures, Alan Greenspan warned that protecting U.S. market from undervalued products by imposing retaliatory tariffs may lead to a decline of standards of living – not only American, but also in the rest of the world.

This paper addresses the question, whether the increasing current account deficit, powered by amplified demands: domestic for foreign goods and foreign for American assets, has had a negative impact on American economy.

This question raises two operational problems to be solved: 1) determination of measurements of welfare that can provide consistent and comparable metrics of welfare and 2) filtering out the net impact of an over large current account deficit on the domestic economy, adjusted for the cyclical and permanent changes in the structure of the economy.

The first of the problems is being solved using consumer confidence index as estimator of an overall welfare of the economy. The approach to crack the second problem is by modeling the current performance of the economy as a joint effect of two factors: income effect of the potential output and cyclical movements and substitution effect of the current account deficit.

By using the time series analysis to filter-out the income effect, the core impact of the unbalanced current account on the welfare can be approximated. Since cyclical movements of the domestic economy affect variation of the consumer confidence, the proposed technique allows to adjust confidence index by removing cyclical component and amplify changes in welfare caused by unbalanced current account.

The first proposed method to is to apply vector auto-regression analysis in order to describe potential output and cyclical movements in terms of endogenous factors. The remaining error (welfare bias) is assumed to be driven by exogenous forces, including current account balance. The following stage of the analysis would include an OLS regression of the welfare bias in the terms of current account and other variables.

An alternative approach may involve autoregressive analysis – conducted simultaneously in two stages. First including all observations and second - including only limited number of observations, excluding the latest decade, when current account exhibited unusually large deficit. Thus the second method plays a role of a estimating the structure of the model in a kind of "control state", where the balanced current account does not exhibit extraordinary deviations. The both structures of the economy: actual and control, are described by the coefficients of the auto-regression. The comparison of the parameters provide information leading to estimation of welfare bias, caused by extraordinary current account deficit. The main assumption of the paper is that the structure of the economy remains unchanged through the entire time span.

The empirical data proposed to be used for analysis include the following:

- U.S. current account
- components of the Composite Index of Coincident Indicators, used as a reference data for cyclical movements, including industrial production, number of non-farm employees, etc.
- pro-cyclical indicators that tend to drive levels of Consumer Confidence and thus bias it by amplifying cyclical pattern, e.g. number of weekly hours, job vacancies, stock exchange index etc.
- Consumer Confidence Index, as a measurement of the perceived welfare

The first step is to adjust data for cyclical movements and estimate "natural values" of all the crucial variables, where "natural" stands for "adjusted for cyclical influence". This can be done by using auto-regression analysis or by calculating reference index of cyclical movements, constructed either deterministically or stochastically to minimize variation of all the variables.

Further, the non-cyclical components of the variables are tested for their coincidence using either OLS or VAR analysis. The obtained parameters, are used to calculate a deviations from "natural levels" of variables and to estimate a dead-weight lose of the unbalanced current account deficit. Additionally the elasticities of the welfare in respect to employment and current account levels are calculated.

II. Data

Data used for empirical analysis were obtained from FRED Economic Database at St. Louis Federal Reserve and consisted of 9 time series, of which two series on Consumer Confidence were merged in the later stage of the data processing, thus finally 8 time series were included: Industrial Production, Total Exports, Total Imports, Total Nonfarm Payrolls (Employment), Index of Help Wanted Advertising, Consumer Sentiment Index, Median Duration of Unemployment and Aggregate Weekly Hours Index. also

The selection of the series was caused by the proposed approach of analysis: in order to estimate welfare effects by changes in Consumer Confidence, it was necessary to adjust it for cyclical conditions on the labor market and to filter out potential causal aspects of external trade on performance of the labor market. This was possible by including 4 time series describing different aspects of labor market standing, while additional use of Industrial Production got rid of regular business fluctuations, which in turn may also be affected by external trade.

The time range of the data was selected based on availability: since joint observations for all series were available beginning July 1967, this date is a start point for the analysis, whereas the endpoint depended on how fast data are publish, but in most cases observations of September

2005 were included, while joint observations of all series were available till June 2005. Most of the series were available in monthly data. However some of them – earlier coverage of consumer confidence, entire data on external trade were available quarterly. Those series were hence interpolated into monthly data using LS estimates to enable provide an analysis based on large number of observations. In total 483 joint observations of all the series were analyzed.

First step was to determine if there are any missing observations or outliers in the data and how they might be treated before proceeding with further data analysis. Since data available on FRED Database are generally of a high quality, there was no adjustment required. The next procedure on the data collected, was then to test it for existence of seasonal factors. In three cases: Median Duration of Unemployment, Consumer Sentiment Index, and Help Wanted Index series were adjusted for seasonal component. For all remaining series seasonal adjustment was not necessary, as the amplitude of seasonal factor did not exceeded 0.5% which has been assumed as a significant magnitude of seasonality.

The finally used series were plotted on the Charts 1a – 1h. Three of the series: Median Duration of Unemployment, Consumer Sentiment Index, and Help Wanted Index seem to be stationary, while all the remaining exhibit a clear trend suggesting non-stationarity. Even if determination of the stochastic process will be provided later, it is important to initially assess which case to consider when testing the individual series for unit roots and thus whether the data needs to be differenced or not before proceeding, by plotting data.

III. Model specification

The modeling of time series data that are non-stationary is a delicate matter. In order to avoid spurious regression problem, in finding a "significant" relationship between non-stationary time series that are in fact independent, the stochastic order of the variables being analyzed has to be recovered. This process, thoroughly discussed in the literature by Granger and Newbold (1974) and Phillips (1986) has become now a traditional starting point in any time series analysis.

The key idea in recovering the stochastic order of the variables being analyzed, is to assess whether the data should be differenced, if it follows I(1) process, or not – if I(0) is a case, before proceeding with the main part of data analysis. If the data is assumed to be I(0) when in fact it is I(1), false statistical conclusions may be easily obtained – leading to a non-robust results and false conclusions.

Beside the regular assessment of stationarity based on observations of plotted series, the unit root test has been executed for all series. In each case, unit test root was conducted according to Augmented Dickey-Fuller test procedure with automatic selection of number of lags using Akaike information criterion. Although the lag length in equation can be determined in a number of ways, here an automatic determination by minimizing a goodness of fit measure was conducted.

In order to provide unbiased an objective evaluation of the order, all of the series were tested excluding intercept and trend, with intercept only and with both intercept and trend included. Additionally, raw series as well as differentiated were tested. For each time series it has to be decided which Dickey-Fuller unit root testing equation should be applied. In the case of potentially slow turning data around a zero mean the appropriate test equation was "case 1":

$$\Delta x_t = t x_{t-1} + a_1 \Delta x_{t-1} + a \Delta x_{t-2} + \cdots + a_p \Delta x_{t-p} + a_t \qquad [1]$$

with null and alternative hypotheses:

$H_0 : t = 0$ (a unit root exists and the data needs to be differenced)

$H_1 : t < 0$ (the data are stationary around a zero mean and differencing is not needed)

The null hypothesis is often tested by the least squares t-statistic for t. At the same time the residuals a_t of the test equation [1] are white noise as indicated by the Box-Pierce Q statistic.

In the case of data turning around a nonzero mean, as for example illustrated by consumer confidence, the appropriate test equation is “case 2”:

$$\Delta x_t = a_0 + t x_{t-1} + a_1 \Delta x_{t-1} + a_2 \Delta x_{t-2} + \cdots + a_p \Delta x_{t-p} + a_t \qquad [2]$$

where $a_0 \neq 0$. The null and alternative hypotheses are the same as in [1].

In the case of trend stationarity, as one could point at aggregate weekly hours, the appropriate test equation is “case 3”:

$$\Delta x_t = a_0 + t x_{t-1} + a_1 \Delta x_{t-1} + a_2 \Delta x_{t-2} + \cdots + a_p \Delta x_{t-p} + dt + a_t \qquad [3]$$

with $a_0 \neq 0$ but $d = 0$ assumed. The null and alternative hypotheses are:

$H_0 : t = 0$ (a unit root exists and the data needs to be differenced)

$H_1 : t < 0$ (the data are stationary around a deterministic trend and should be detrended). See Figure 4.

The choice of the appropriate case for unit root testing is crucial for the test be consistent. The choice of the lag length p is also important in order to ensure the approximate size of the test and the best possible power. Since the residuals are not normally distributed, instead follow white noise as indicated by the Box-Pierce Q statistic, the critical values for all tests presented above are not available in conventional statistical tables, appropriate tables can be found for example in Hamilton (1994).

In selecting the actual data generating process, the priority was to avoid differentiating. However, if none of the raw data specification did not pass the ADF test, the differentiated series were tested, for all possible specifications of the structure of the process, excluding intercept or trend in specification whenever possible.

The results of unit test roots, presented in Table 1, generally confirmed the observed characters of process generation in each case:

- Index of Help Wanted Advertising exhibit stationarity – it fluctuates around constant;
- Consumer Sentiment Index, Median Duration of Unemployment, Industrial Production, Aggregate Weekly Hours Index and Total Nonfarm Payrolls (Employment) also exhibit stationarity, but around linear trend;
- Industrial Production was differentiated and differences were stationary around a constant
- Both series concerning external trade do not exhibit stationarity even after including trend, however after differentiating, the differentiated series are trend stationary, this can be also observed by a movement of observations around a nonlinear trend.

The results of the Dickey-Fuller unit root tests supported determination of the stochastic order of each series.

According to Engle and Granger (1987), presence of time series that are I(1) – Industrial Production, Total Exports, Total Imports, Total Nonfarm Payrolls (Employment) and Aggregate Weekly Hours Index - raises concerns about their cointegration. This can be tested either by the single equation methods of Engle and Granger (1987), Phillips and Ouliaris (1990) or by using the system of equations approach proposed by Johansen (1988, 1991).

If the series are indeed cointegrated, one can build an equal lag length Error Correction Model of the form:

$$\Delta y_t = a_0 + a_1 \Delta y_{t-1} + \cdots + a_\ell \Delta y_{t-\ell} + q_1 \Delta x_{t-1} + \cdots + q_\ell \Delta x_{t-\ell}$$

$$+ d_1 (b_0 + b_1 y_{t-1} + b_2 x_{t-1} + b_3 (t-1)) + g_1 t + e_{t1} \qquad [4]$$

$$\Delta x_t = p_0 + p_1 \Delta x_{t-1} + \cdots + p_\ell \Delta x_{t-\ell} + j_1 \Delta y_{t-1} + \cdots + j_\ell \Delta y_{t-\ell}$$

$$+ d_2 (b_0 + b_1 y_{t-1} + b_2 x_{t-1} + b_3 (t-1)) + g_2 t + e_{t2} \,. \qquad [5]$$

where, x_t and y_t are both I(1) and cointegrated with cointegrating relationship:

$$z_t = b_0 + b_1 y_t + b_2 x_t + b_3 t \,, \qquad [6]$$

where z_t is an I(0) process with zero mean. (The most common case assumes b_3 = 0 and therefore that the time trend is absent from the cointegrating relationship.) The equations [4] and [5] give rise to five different models, that can be distinguished by examining a series of likelihood ratio tests.

If in turn, all time series are I(1) but not cointegrated, then one should use either independent Box-Jenkins time series, transfer function model or classical VAR model with equal lag-length, after differencing each individual series into I(0) process.

In order to distinguish between Box-Jenkins specification, transfer function model or VAR model the use of the Granger (1969) causality test should be conducted. If the Granger causality test indicates that all of the series, in their stationary forms are independent, separate, independent Box-Jenkins models should be estimated, using the conventional identification and estimation techniques of Box and Jenkins (1970, 1976). However, if the Granger causal test indicates one-way causality, a transfer function model, in the spirit of Box and Jenkins (1970) or Vandaele (1983) is built. In the last case, if two-way causality is indicated by Granger causal testing as in analyzed case, an equal-lag length VAR can be used to characterize the relations between each of the time series included. The equal lag length of the VAR can be determined either by using system-wide goodness-of-fit measures of Enders (1995) or by simple observations of autocorrelation and partial autocorrelation profiles.

Since the analyzed series were not all consistent with I(1) process the Error Correction Model was not concerned. Instead the mixed characters of the data generating processes provided basis to use either independent Box-Jenkins time series:

$$y_t = a_0 + a_1 y_{t-1} + \cdots + a_p y_{t-p} + a_t - t_1 a_{t-1} - \cdots - t_q a_{t-q} \qquad [7]$$

$$x_t = f_0 + f_1 x_{t-1} + \cdots + f_r x_{t-r} + v_t - q_1 v_{t-1} - \cdots - q_s v_{t-s}, \qquad [8]$$

where a_t and v_t are independent white noise error terms. That is, y_t follows an ARMA(p,q) Box-Jenkins process and x_t follows an ARMA(r,s) Box-Jenkins process both of which are independent of each other. In the case that either y_t or x_t is I(1) or both are I(1) but not cointegrated, the y_t's and/or x_t's in the above equations [7] and/or [8] are replaced by their stationary forms, i.e. Δy_t and/or Δx_t;

or a transfer function model:

$$y_t = m_x + \frac{w(B)}{d(B)} x_{t-b} + \frac{q(B)}{f(B)} a_t \qquad [9]$$

$$x_t = m_y + \frac{t(B)}{p(B)} v_t\,, \qquad [10]$$

where a_t and v_t are independent white noise error terms, such that follow the forms:

$$w(B) = 1 - w_1 B - w_2 B^2 - \cdots - w_r B^r$$

$$d(B) = 1 - d_1 B - d_2 B^2 - \cdots - d_s B^s$$

$$q(B) = 1 - q_1 B - q_2 B^2 - \cdots - q_q B^q$$

$$f(B) = 1 - f_1 B - f_2 B^2 - \cdots - f_p B^p$$

$$t(B) = 1 - t_1 B - t_2 B^2 - \ldots - t_m B^m$$

$$p(B) = 1 - p_1 B - p_2 B^2 - \cdots - p_n B^n\,. \qquad [11]$$

In the case considered, instead the transformed series have exhibited Grange-causality. Thus, it has been determined that equal-length VAR model data generation would be the most appropriate to apply:

$$y_t = a_0 + a_1 y_{t-1} + \cdots + a_\ell y_{t-\ell} + b_1 x_{t-1} + \cdots + b_\ell x_{t-\ell} + e_{t1} \qquad [12]$$

$$x_t = q_0 + q_1 x_{t-1} + \cdots + q_\ell x_{t-\ell} + t_1 y_{t-1} + \cdots + t_\ell y_{t-\ell} + e_{t2} \qquad [13]$$

where for each series included, a different equation has to be estimated using data in their stationary forms, i.e. $\Delta y_t, \Delta x_t$ for any I(1) process.

The Augmented Dickey-Fuller unit root tests indicated mixed character of series, thus in each case, depending on the assessed data generating process, all series consistent with I(0) specification were either normalized by adjusting for intercept if they were non-trended, stationary series or detrended in case of trend stationary data. Similarly, the series that were evaluated as I(1) were differentiated and after that respectively normalized. The transformed series were plotted on the Charts 2a – 2h, as they were finally used for specification of the model.

Although one could argue for using non-differentiated series or to use non-linear trend specification, the proposed approach is consistent with a non-contested procedure, where avoiding spurious regression problem in analyzing non-stationary time series is one of the main objective considered.

		IP	Employ	Duration	CCI	Exports	Imports	Hours	Help
no intercept	ADF I(0)	2.996616	2.730921	-0.215926	-0.643423	3.445221	3.367643	2.688176	-0.869657
no trend	ADF I(1)	-6.937685	-3.311601	-5.785503	-21.53955	-3.573417	-1.524725	-5.310793	-5.194882
intercept	ADF I(0)	0.260920	-0.449096	-3.028616	-2.865469	2.012029	2.625972	-0.222642	**-2.419289**
no trend	ADF I(1)	**-7.643559**	-4.466133	-5.803565	-21.51851	-4.560931	-2.501101	-6.603729	-5.203232
intercept	ADF I(0)	-1.953008	**-3.677192**	**-3.529016**	**-3.243901**	-0.770143	0.709602	**-2.932089**	-2.477627
trend	ADF I(1)	-7.675940	-4.461125	-5.798911	-21.49347	**-5.064828**	**-3.726215**	-6.602468	-5.229344

The results of cointegration tests are presented in Table 2. In each case, whenever the null hypothesis: no Grange-causality was rejected, the results were highlighted. As shown, about half of the series were cointegrated in the Grange sense. This required application of a equal-length

VAR method to filter out direct effects of volatility in Exports and Imports on changes in Consumer Confidence.

However, before proceeding with VAR, it is necessary to estimate what number of lags should be included in the VAR specification. To assess this, the ACF and PACF analysis has been conducted for each series included in VAR estimation. The values autocorrelations and partial autocorrelations were listed in Table 3.

As shown, most of the series are described as autoregressive processes - their autocorrelations die out gradually, while partial autocorrelations declines after one lag: Consumer Sentiment Index, Median Duration of Unemployment, Total Nonfarm Payrolls, Index of Help Wanted Advertising and Aggregate Weekly Hours Index.

The other series: particularly Industrial Production and series on external trade are described by a moving average process or a mixed autoregressive - moving average process, as their autocorrelations have considerably lower values of autocorrelations, whereas partial correlations die out slowly more periods.

The critical number of lags taken into VAR analysis was 4 lags, as all of the partial autocorrelations are losing their significance at 5 lags. The following procedure was thus to estimate coefficients of VAR, where all the series described above have been included as endogenous series. The results of estimated coefficients are presented in Table 4, with standard errors and t-statistics included.

In Table 5 the basic statistics of estimated equations were presented. As shown, the equations of Median Duration of Unemployment, Total Nonfarm Payrolls and Index of Help Wanted Advertising were the most efficiently estimated, while imports and number of hours worked were left with relatively most of the volatility unexplained within the modeled specification.

The signs of coefficients on Consumer Sentiment Index in respect to external trade are different across lags, which means that both changes in levels as well as in dynamics affect directly consumer confidence. To show the responsiveness of consumers' sentiments to temporary and permanent change in both exports and imports, simulated effects were calculated. Assuming values of exports, imports and consumer confidence at the constant value for any period before t = 0, an experiment of responsiveness of consumer confidence index in respect to one time shock at period t = 0 was conducted. Results were presented in charts 2a – 2f.

The following set of charts 3a – 3d show the time profiles of Consumer Sentiments responses to a total effect of temporary or permanent changes in exports, imports and symmetric changes of both of them. The total effect consists of direct effect that external trade measures have on Consumer Confidence Index, as well as indirect effects, transponded through different channels – mostly labor market. The VAR allows to separate different channels of responses to a shock in external trade, and to study their impact individual impact on the Consumer Confidence. Since this paper analyses the welfare effect of changes in trade policy, only the aggregated effect was considered.

IV. Results

The data were used to build two separate VAR models, where exports and imports were assumed endogenous or exogenous. This allowed to study welfare effects, as estimated by responsiveness of consumer confidence, to permanent and temporary changes in external trade, as well as to to simulated changes in actual data on exports and imports for U.S.

The first method was to estimate VAR specification, were all series were treated endogenously. This estimated coefficients of the model, provided basis to study the direct wealth effects of a one time increase of one unit either by the exports, imports or the symmetric increase in both measures of external trade activity. Similarly, the responsiveness to a permanent change has been tested. It is important to point out, that since data on external trade were differentiated, the increased measures by one unit should be interpreted as a permanent increase of the level by one unit (temporary change in differentiated data) or as a permanent change in a growth rate – in a case of a permanent increase in a differentiated data.

The profiles of the estimated responsiveness have been sketched on Charts 3a-3f. The first two charts show a temporary increase in differentiated data of exports (3a) and imports (3b). In both cases, immediate response is an increase of the welfare, followed by less severe decrease and asymptotic convergence to steady state level for exports or more severe decrease below the steady state and convergence to steady state from a negative part. This may be interpreted as a positive welfare effect of permanent increase in level of exports by one unit and an ambiguous effect for similar increase in imports. Though, the direct welfare effect for imports is positive shortly after the impulse happened, while then it becomes negative.

Similar profiles of the estimated responsiveness have been sketched for permanent changes in the growth rates of the exports and imports. The permanent increase in growth rate of exports (3c) show an asymptotic increase in welfare with decreasing dynamics. The interestingly, the effect is spread over time, though converging, the dynamics of the welfare has not died out after 50 observations, which means a long-run positive effects of enhanced dynamics in the exports and lack of immediate effects, illustrated by no change during the three periods following the first observation of increased growth of exports.

The effect on a permanent change in the growth rate of the imports seems to be much less severe than for similar change in exports. Also the welfare effects converges much faster. As in the case of a permanent increase, the first response is positive, while than effect becomes negative.

Interestingly, there is an asymmetric responsiveness of the welfare to changes in exports and imports: the welfare effects are much stronger for exports than for imports, and direction of the response to changes in imports is inconsistent over time. The joint response to a symmetric change in permanent increase in levels of both exports and imports by one unit are illustrated on chart 3e, where the opposite effects in the initial stage of response, as illustrated on charts 3a and 3b, are partially neutralized and provide an unambiguous conclusion that symmetric, permanent increase in foreign trade has positive welfare effects in both short- and long-run.

The response to a permanent increase in growth rate of both exports and imports, as illustrated on Chart 3f, show a strong positive effect with a slowing dynamics, but a very long time of dying out effect. Though, the ever-lasting increase of dynamics of the external trade is practically hard to experience, the analysis provide support for thesis, that development of trade affected by trade liberalization and new technologies, bring positive direct welfare effects.

After studying the direct effects of exports and imports on perceived welfare, the total effects have been estimated. Using similar way of presenting results by sketching time-profiles of responses in consumer confidence, also indirect effects of changes in exports and imports through different channels – mostly of labor market – have been included.

Chart 4a presents two paths of consumer confidence, where thin line stands for no change in the exports, while the thick one, assumes a one time increase in differentiated exports. Thus a permanent increase of exports by one unit lead to a superior welfare, cumulated during the first three years after shock starts, followed by a negative effect thereafter, converging to a steady state level.

Similar presentation (Chart 4b) of imports effect show a short-run positive effect immediately after change occurrence, followed by an inconsistent over time negative effect with observable memory effects thereafter. This impulse response seem to die out in magnitude within one decade, though the memory effect persists. Beside, the puzzling memory effect, the results are consistent with economic intuition, which suggests a total negative effect from an asymmetric increase in imports through the negative impact on the labor market.

The permanent changes in growth rate of exports have positive effect during the first decade, while after that effect becomes negative and converges to a steady state as illustrated on chart 4c. Similar change in imports provide a long-lasting negative total welfare effect, that converges very slowly. The simulated results show that negative effect is still very large 15 years after change in the growth rate

Interestingly, the symmetric temporary increases in exports and imports does not bring positive effects for ever – as it was a case in studying a direct effect on welfare. Instead, as illustrated in chart 4e, positive effect that occurs immediately after permanent increase in magnitude of trade, dies out within first two years and becomes negative thereafter. The discounted effect over entire life-span seems to be ambiguous and largely depends on the assumed discount rate.

A permanent and symmetric change in growth rates of exports and imports amplifies the results obtained for permanent change in levels: the positive effect last for couple years, with the strongest positive effect two years after change, however after four years the perceived effects become persistently negative, as shown on chart 4f. This provides a surprising conclusion, that ever-lasting trade expansion would has negative welfare effect, through negative effect on labor market, though direct effect, as described earlier was positive.

The second method of estimating VAR specification, treated exports and imports as exogenous variables. This allowed to provide more robust estimation of the welfare effects as driven by changes in the actual data on exports and imports.

Precisely, the effects of joint response to different exports and imports characteristics has been analyzed, where actual data on exports and imports were simulated to be cut either by 50% or 100% beginning January 1999.

This assumptions were taken in order to illustrate, how the perceived welfare would change, if the huge increase in magnitude of foreign trade in U.S. after 1999 was not observed. It has been also estimated, what size of the exports and imports would be socially desired in terms of either increased wealth or decreased volatility of wealth.

The four charts: 5a – 5d presents different specifications of the exports and imports, reduced either solely or jointly by 50% or 100%. The results show, that reduction on trade would lead to a decreased level of social welfare, while it would also lead to diminished volatility. Reducing only exports (chart 5c) would strongly enhance the volatility of the welfare, while reduction of the imports, would potentially lead to less volatile, though lower magnitude of the welfare.

The results of the simulations of the optimal trade policy in terms of social benefits suggest trade liberalization in order to increase welfare and closeness of the economy to provide less volatile welfare. The latest conclusion stands in confront to economic theory, where openness of the economy should absorb shocks in the domestic economy and thus lead to less instability.

V. Conclusions

The paper addressed the question, whether the increasing current account deficit has negative impact on American economy and society. Using data for American economy in years 1967 – 2005, it has been shown that perceived welfare effects, as measured by changes in Consumer Confidence, asymmetrically reflect changes in exports and imports. The provided VAR analysis allowed to filter out potential output and cyclical movements in endogenous factors and to describe the remaining error in terms of external trade volatility. Keeping information on exports and imports as external factors allowed to estimate a structure of the model, where the responsiveness of perceived welfare in respect to simulated changes in current account was studied. The provided analysis showed that opening the economy enhanced observed volatility of the Consumer Confidence, while presence of the current account deficit allowed to obtain superior welfare.

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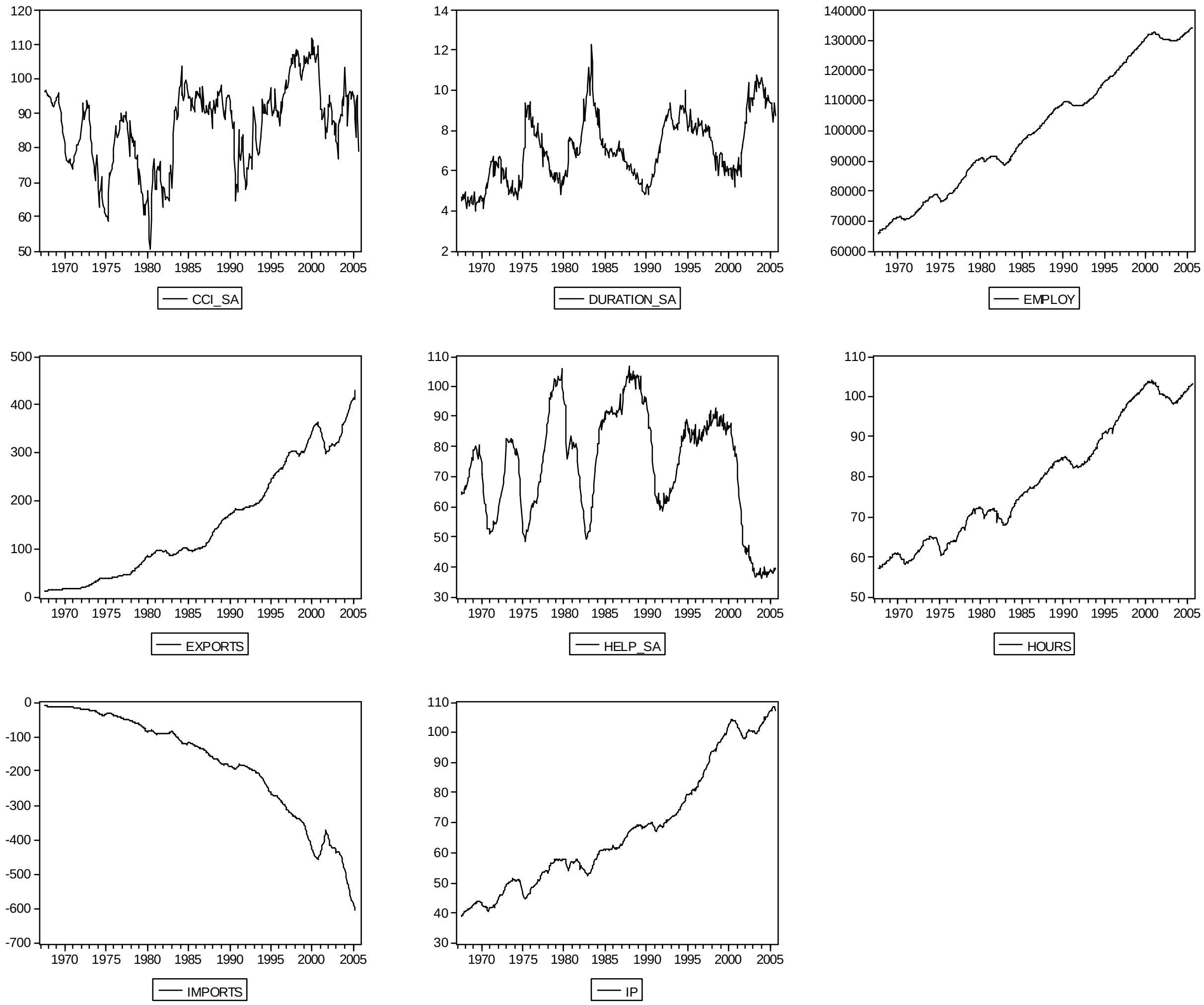
Charts 1a – 1h: Time profiles of raw data, included in analysis



Charts 2a – 2h: Time profiles of data transformed into stationary form

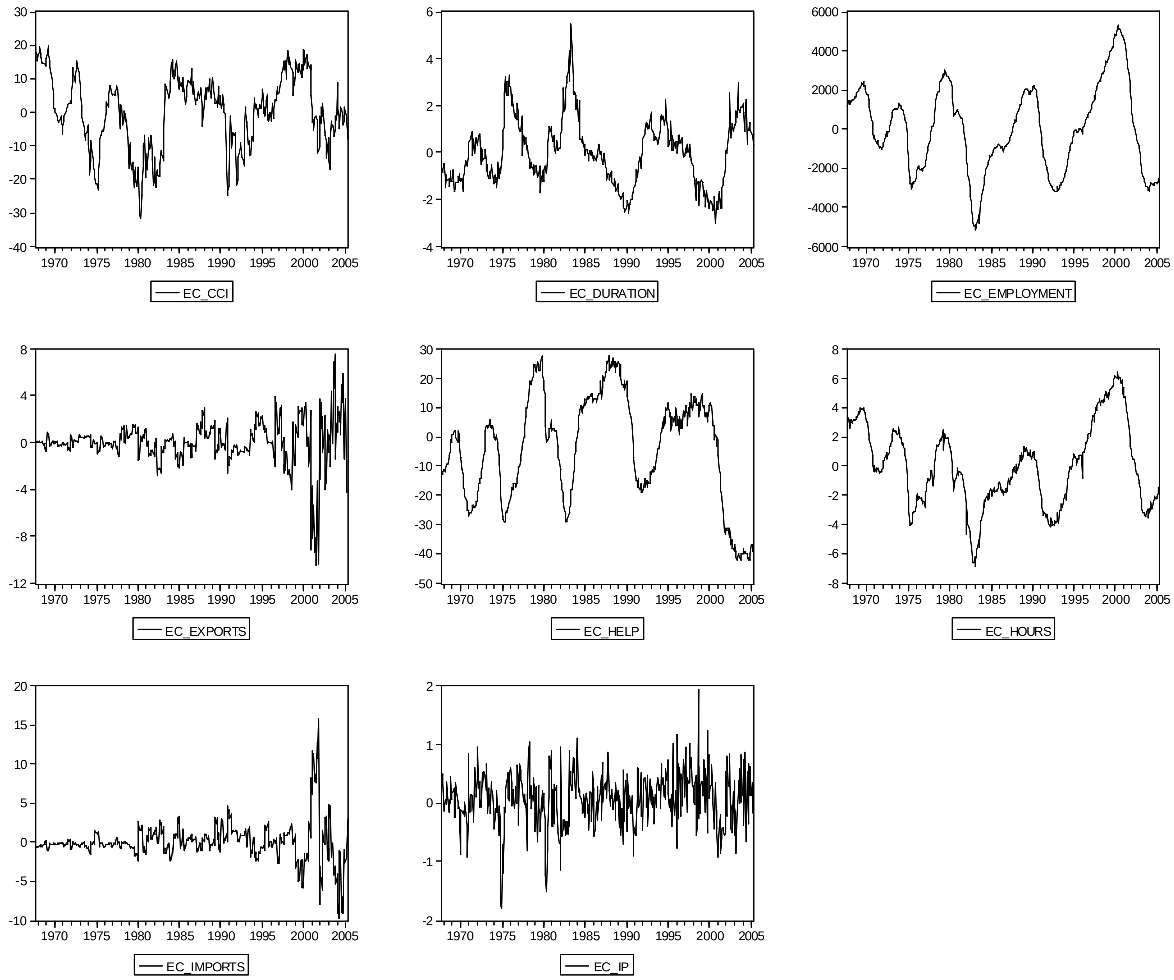


Table 1: Results of the Augmented Dickey-Fuller unit roots tests, the bolded font stands for the form, in which data were transformed

		IP	Employ	Duration	CCI	Exports	Imports	Hours	Help
no intercept	ADF I(0)	2.996616	2.730921	-0.215926	-0.643423	3.445221	3.367643	2.688176	-0.869657
no trend	ADF I(1)	-6.937685	-3.311601	-5.785503	-21.53955	-3.573417	-1.524725	-5.310793	-5.194882
intercept	ADF I(0)	0.260920	-0.449096	-3.028616	-2.865469	2.012029	2.625972	-0.222642	**-2.419289**
no trend	ADF I(1)	**-7.643559**	-4.466133	-5.803565	-21.51851	-4.560931	-2.501101	-6.603729	-5.203232
intercept	ADF I(0)	-1.953008	**-3.677192**	**-3.529016**	**-3.243901**	-0.770143	0.709602	**-2.932089**	-2.477627
trend	ADF I(1)	-7.675940	-4.461125	-5.798911	-21.49347	**-5.064828**	**-3.726215**	-6.602468	-5.229344

Table 2: Results of Grange-causality tests

Null Hypothesis:	Obs	F-Statistic	Probability
EC_EMPLOYMENT does not Granger Cause EC_CCI	**449**	**2.78305**	**0.01731**
EC_CCI does not Granger Cause EC_EMPLOYMENT		**7.93866**	**3.6E-07**
EC_IP does not Granger Cause EC_CCI	**448**	**2.87333**	**0.01448**
EC_CCI does not Granger Cause EC_IP		**10.9348**	**6.2E-10**
EC_EXPORTS does not Granger Cause EC_CCI	448	1.16103	0.32753
EC_CCI does not Granger Cause EC_EXPORTS		1.41714	0.21673
EC_IMPORTS does not Granger Cause EC_CCI	448	2.01575	0.07528
EC_CCI does not Granger Cause EC_IMPORTS		1.51608	0.18341
EC_DURATION does not Granger Cause EC_CCI	449	2.30486	0.04376
EC_CCI does not Granger Cause EC_DURATION		**10.6602**	**1.1E-09**
EC_HELP does not Granger Cause EC_CCI	449	1.63521	0.14930
EC_CCI does not Granger Cause EC_HELP		**3.88016**	**0.00188**
EC_HOURS does not Granger Cause EC_CCI	449	2.14772	0.05889
EC_CCI does not Granger Cause EC_HOURS		**7.87367**	**4.1E-07**
EC_IP does not Granger Cause EC_EMPLOYMENT	**448**	**5.27354**	**0.00010**
EC_EMPLOYMENT does not Granger Cause EC_IP		**4.40180**	**0.00064**
EC_EXPORTS does not Granger Cause EC_EMPLOYMENT	448	1.61758	0.15397
EC_EMPLOYMENT does not Granger Cause EC_EXPORTS		0.78658	0.55972
EC_IMPORTS does not Granger Cause EC_EMPLOYMENT	**448**	**3.00556**	**0.01113**
EC_EMPLOYMENT does not Granger Cause EC_IMPORTS		0.84557	0.51792
EC_DURATION does not Granger Cause EC_EMPLOYMENT	449	1.82569	0.10648
EC_EMPLOYMENT does not Granger Cause EC_DURATION		**21.2341**	**0.00000**
EC_HELP does not Granger Cause EC_EMPLOYMENT	**449**	**18.4169**	**1.3E-16**
EC_EMPLOYMENT does not Granger Cause EC_HELP		**8.02902**	**2.9E-07**
EC_HOURS does not Granger Cause EC_EMPLOYMENT	449	0.74846	0.58755
EC_EMPLOYMENT does not Granger Cause EC_HOURS		**13.4474**	**3.3E-12**
EC_EXPORTS does not Granger Cause EC_IP	**448**	**4.13620**	**0.00111**
EC_IP does not Granger Cause EC_EXPORTS		1.00115	0.41657
EC_IMPORTS does not Granger Cause EC_IP	**448**	**6.01493**	**2.1E-05**
EC_IP does not Granger Cause EC_IMPORTS		1.24260	0.28814
EC_DURATION does not Granger Cause EC_IP	448	2.57475	0.02603
EC_IP does not Granger Cause EC_DURATION		**13.2591**	**4.8E-12**
EC_HELP does not Granger Cause EC_IP	**448**	**10.3022**	**2.4E-09**
EC_IP does not Granger Cause EC_HELP		1.64261	0.14739
EC_HOURS does not Granger Cause EC_IP	448	1.14114	0.33775
EC_IP does not Granger Cause EC_HOURS		**7.01908**	**2.5E-06**
EC_IMPORTS does not Granger Cause EC_EXPORTS	**448**	**2.81347**	**0.01630**
EC_EXPORTS does not Granger Cause EC_IMPORTS		**8.38758**	**1.4E-07**
EC_DURATION does not Granger Cause EC_EXPORTS	448	1.44176	0.20798
EC_EXPORTS does not Granger Cause EC_DURATION		1.28112	0.27090
EC_HELP does not Granger Cause EC_EXPORTS	448	1.29344	0.26557
EC_EXPORTS does not Granger Cause EC_HELP		0.79695	0.55226
EC_HELP does not Granger Cause EC_IMPORTS	448	1.20366	0.30644
EC_IMPORTS does not Granger Cause EC_HELP		1.66739	0.14113
EC_HOURS does not Granger Cause EC_IMPORTS	448	0.97048	0.43544
EC_IMPORTS does not Granger Cause EC_HOURS		**2.70973**	**0.02000**
EC_HELP does not Granger Cause EC_DURATION	**449**	**12.6750**	**1.6E-11**
EC_DURATION does not Granger Cause EC_HELP		**3.75395**	**0.00244**
EC_HOURS does not Granger Cause EC_DURATION	**449**	**16.3377**	**8.6E-15**
EC_DURATION does not Granger Cause EC_HOURS		1.45866	0.20215
EC_HOURS does not Granger Cause EC_HELP	**449**	**6.13326**	**1.7E-05**
EC_HELP does not Granger Cause EC_HOURS		**16.8493**	**3.1E-15**

Table 3: Total and partial autorrelations

	CCI		Duration		Employment		Exports		Help		Hours		Imports		IP	
lags	AC	PAC	AC	PAC	AC	PAC	AC	PAC	AC	PAC	AC	PAC	AC	PAC	AC	PAC
1	0.946	0.946	0.949	0.949	0.994	0.994	0.561	0.561	0.986	0.986	0.989	0.989	0.690	0.690	0.302	0.302
2	0.895	0.006	0.927	0.259	0.984	-0.398	0.558	0.354	0.973	0.001	0.978	0.018	0.640	0.314	0.299	0.228
3	0.846	-0.013	0.906	0.083	0.970	-0.322	0.537	0.227	0.956	-0.134	0.965	-0.148	0.463	-0.119	0.277	0.161
4	0.803	0.034	0.881	-0.012	0.951	-0.211	0.418	-0.021	0.934	-0.225	0.946	-0.247	0.442	0.108	0.148	-0.014
5	0.764	0.012	0.850	-0.101	0.928	-0.099	0.368	-0.034	0.910	-0.037	0.925	-0.138	0.360	0.027	0.112	-0.019
6	0.732	0.053	0.813	-0.121	0.902	-0.099	0.280	-0.086	0.883	-0.131	0.901	-0.074	0.288	-0.091	0.131	0.050
7	0.700	-0.013	0.776	-0.092	0.873	-0.048	0.248	0.000	0.851	-0.118	0.875	-0.054	0.211	-0.037	0.060	-0.015
8	0.669	0.006	0.731	-0.132	0.841	-0.070	0.202	0.005	0.821	0.040	0.848	-0.036	0.142	-0.039	0.106	0.059
9	0.633	-0.065	0.690	-0.032	0.807	-0.051	0.042	-0.205	0.789	0.013	0.819	-0.019	0.071	-0.076	0.145	0.093
10	0.594	-0.049	0.643	-0.079	0.770	-0.041	0.092	0.046	0.752	-0.156	0.787	-0.091	0.019	-0.029	0.069	-0.018
11	0.558	0.016	0.604	0.053	0.731	0.005	0.039	0.024	0.718	0.072	0.755	-0.002	-0.034	-0.034	0.045	-0.049
12	0.522	-0.028	0.562	0.006	0.691	-0.005	-0.088	-0.144	0.681	-0.068	0.722	-0.013	-0.129	-0.161	0.019	-0.050
13	0.479	-0.100	0.511	-0.097	0.649	-0.013	-0.033	0.042	0.641	-0.140	0.689	0.038	-0.132	0.055	-0.071	-0.099
14	0.443	0.032	0.471	0.047	0.607	-0.046	-0.074	0.018	0.605	0.124	0.656	0.001	-0.156	0.036	-0.035	-0.005
15	0.403	-0.058	0.424	-0.061	0.563	-0.033	-0.065	0.052	0.566	-0.045	0.622	-0.036	-0.208	-0.167	-0.034	0.011
16	0.369	0.023	0.385	0.037	0.518	0.003	-0.115	-0.063	0.527	-0.013	0.587	-0.086	-0.155	0.171	-0.043	0.008
17	0.331	-0.066	0.347	0.030	0.473	-0.023	-0.129	-0.043	0.490	0.045	0.552	0.019	-0.148	0.073	-0.009	0.015
18	0.296	-0.001	0.309	-0.014	0.428	-0.021	-0.135	-0.084	0.451	-0.071	0.518	-0.018	-0.114	-0.072	0.046	0.062
19	0.256	-0.062	0.268	-0.035	0.383	-0.031	-0.160	-0.003	0.412	-0.065	0.482	-0.017	-0.114	0.036	-0.049	-0.072
20	0.224	0.028	0.229	-0.049	0.337	-0.029	-0.169	-0.006	0.376	0.058	0.447	-0.050	-0.101	0.002	0.019	0.021
21	0.190	-0.026	0.190	-0.060	0.292	0.000	-0.173	-0.079	0.339	-0.003	0.411	-0.057	-0.086	-0.054	-0.053	-0.055
22	0.156	-0.036	0.151	-0.037	0.247	0.007	-0.180	0.004	0.303	-0.013	0.376	0.023	-0.075	0.010	-0.078	-0.033
23	0.127	0.028	0.119	0.007	0.203	0.038	-0.168	0.018	0.270	0.063	0.343	0.101	-0.068	-0.018	-0.008	0.053
24	0.100	-0.015	0.074	-0.110	0.159	-0.030	-0.227	-0.120	0.233	-0.143	0.309	-0.036	-0.033	-0.012	-0.148	-0.137
25	0.067	-0.066	0.041	0.026	0.117	0.057	-0.156	0.064	0.201	0.081	0.277	0.047	-0.054	-0.040	-0.066	0.015
26	0.037	-0.003	0.016	0.108	0.077	-0.002	-0.150	0.043	0.171	0.017	0.249	0.106	-0.057	-0.047	-0.038	0.006
27	0.016	0.070	-0.016	-0.016	0.038	0.027	-0.199	-0.082	0.140	-0.031	0.220	-0.047	-0.071	-0.084	-0.054	0.000
28	0.002	0.034	-0.044	0.002	0.000	-0.043	-0.123	0.042	0.112	0.010	0.192	-0.043	-0.087	-0.004	-0.010	0.037
29	-0.004	0.083	-0.071	-0.018	-0.036	-0.032	-0.119	0.024	0.084	-0.044	0.166	0.025	-0.094	0.001	0.003	0.012
30	0.000	0.089	-0.098	-0.044	-0.071	-0.016	-0.069	0.041	0.055	-0.029	0.140	-0.060	-0.113	-0.088	0.039	0.086
31	0.000	-0.016	-0.125	-0.040	-0.104	-0.034	-0.093	-0.052	0.030	-0.001	0.115	-0.058	-0.088	0.107	-0.007	-0.025
32	-0.007	-0.071	-0.151	-0.060	-0.135	-0.032	-0.083	-0.037	0.006	0.032	0.092	-0.009	-0.095	0.011	0.066	0.059
33	-0.018	-0.018	-0.175	-0.021	-0.165	0.028	-0.077	-0.113	-0.019	-0.046	0.069	0.024	-0.057	0.026	-0.055	-0.085
34	-0.033	-0.043	-0.195	0.009	-0.193	0.003	-0.080	0.018	-0.039	0.059	0.047	-0.041	-0.127	-0.143	-0.052	-0.067
35	-0.043	0.024	-0.218	-0.050	-0.219	-0.029	-0.075	0.018	-0.059	0.026	0.026	-0.014	-0.140	-0.086	-0.047	-0.040
36	-0.053	-0.041	-0.241	-0.004	-0.244	0.018	-0.091	-0.141	-0.080	-0.106	0.006	0.036	-0.226	-0.120	-0.098	-0.069

Table 4: Estimated VAR specification

	CCI	Duration	Employment	Exports	Help	Hours	Imports	IP
CCI(-1)	0.919306	0.097144	0.011333	0.007552	4.071496	0.022430	0.025888	-0.051908
	(0.04940)	(0.03161)	(0.00476)	(0.00570)	(1.84977)	(0.00549)	(0.02111)	(0.02469)
	[18.6105]	[3.07276]	[2.37936]	[1.32440]	[2.20108]	[4.08338]	[1.22654]	[-2.10203]
CCI(-2)	0.001234	-0.030947	0.001938	-0.004779	1.862438	0.000301	-0.031149	0.049775
	(0.06653)	(0.04258)	(0.00642)	(0.00768)	(2.49141)	(0.00740)	(0.02843)	(0.03326)
	[0.01855]	[-0.72679]	[0.30210]	[-0.62228]	[0.74754]	[0.04062]	[-1.09571]	[1.49654]
CCI(-3)	-0.045538	-0.036563	-0.011418	-0.013452	-3.334838	-0.012910	0.024554	-0.036379
	(0.06634)	(0.04246)	(0.00640)	(0.00766)	(2.48422)	(0.00738)	(0.02835)	(0.03316)
	[-0.68643]	[-0.86115]	[-1.78491]	[-1.75667]	[-1.34241]	[-1.75000]	[0.86624]	[-1.09693]
CCI(-4)	0.075283	0.016985	0.002945	0.002218	0.303199	-0.001710	-0.028293	0.037757
	(0.05154)	(0.03299)	(0.00497)	(0.00595)	(1.93020)	(0.00573)	(0.02202)	(0.02577)
	[1.46053]	[0.51486]	[0.59260]	[0.37277]	[0.15708]	[-0.29835]	[-1.28462]	[1.46525]
HELP(-1)	-0.003443	0.737393	0.010309	0.004399	16.94225	0.019442	-0.012674	0.028117
	(0.08097)	(0.05182)	(0.00781)	(0.00935)	(3.03206)	(0.00900)	(0.03460)	(0.04048)
	[-0.04252]	[14.2296]	[1.32034]	[0.47070]	[5.58770]	[2.15936]	[-0.36634]	[0.69462]
HELP(-2)	-0.093929	0.284523	0.020581	-0.012100	4.582983	0.017548	0.021421	-0.035772
	(0.10012)	(0.06408)	(0.00965)	(0.01156)	(3.74936)	(0.01113)	(0.04278)	(0.05005)
	[-0.93812]	[4.44009]	[2.13172]	[-1.04692]	[1.22234]	[1.57608]	[0.50070]	[-0.71466]
HELP(-3)	0.160500	0.196889	0.002601	0.009585	-6.671646	-0.008997	0.058033	-0.026720
	(0.09928)	(0.06354)	(0.00957)	(0.01146)	(3.71764)	(0.01104)	(0.04242)	(0.04963)
	[1.61668]	[3.09874]	[0.27172]	[0.83640]	[-1.79459]	[-0.81499]	[1.36807]	[-0.53838]
HELP(-4)	-0.058361	-0.227593	-0.032919	-0.002201	-12.42023	-0.027993	-0.060737	0.038579
	(0.08501)	(0.05441)	(0.00820)	(0.00981)	(3.18345)	(0.00945)	(0.03632)	(0.04250)
	[-0.68650]	[-4.18302]	[-4.01581]	[-0.22427]	[-3.90149]	[-2.96115]	[-1.67207]	[0.90777]
HOURS(-1)	0.613691	0.574314	0.388579	-0.038964	8.751610	-0.089903	-0.604921	0.153426
	(0.70272)	(0.44975)	(0.06776)	(0.08112)	(26.3147)	(0.07814)	(0.30026)	(0.35130)
	[0.87331]	[1.27697]	[5.73459]	[-0.48035]	[0.33257]	[-1.15050]	[-2.01464]	[0.43674]
HOURS(-2)	0.900502	-0.097704	0.220336	0.018792	0.411487	0.107195	0.224225	0.019964
	(0.72984)	(0.46710)	(0.07038)	(0.08425)	(27.3302)	(0.08116)	(0.31185)	(0.36486)
	[1.23384]	[-0.20917]	[3.13087]	[0.22306]	[0.01506]	[1.32083]	[0.71902]	[0.05472]
HOURS(-3)	-0.631364	0.189750	0.256520	-0.043038	-14.05937	-0.003486	0.188482	-0.178616
	(0.72836)	(0.46616)	(0.07023)	(0.08408)	(27.2749)	(0.08099)	(0.31122)	(0.36412)
	[-0.86683]	[0.40705]	[3.65242]	[-0.51190]	[-0.51547]	[-0.04304]	[0.60563]	[-0.49054]
HOURS(-4)	-0.519621	-0.684915	0.099138	0.105133	14.11767	-0.017099	0.180768	-0.065889
	(0.68225)	(0.43665)	(0.06579)	(0.07875)	(25.5483)	(0.07587)	(0.29152)	(0.34107)
	[-0.76163]	[-1.56858]	[1.50695]	[1.33496]	[0.55259]	[-0.22539]	[0.62010]	[-0.19318]
DURATION(-1)	0.306971	0.004689	0.003036	0.458484	8.646730	0.044183	-0.052123	-0.024160
	(0.42296)	(0.27070)	(0.04078)	(0.04882)	(15.8385)	(0.04703)	(0.18072)	(0.21144)
	[0.72577]	[0.01732]	[0.07443]	[9.39079]	[0.54593]	[0.93941]	[-0.28841]	[-0.11426]
DURATION(-2)	0.254422	0.517436	-0.030136	0.179105	-16.70660	0.036473	0.374846	-0.294659
	(0.46066)	(0.29483)	(0.04442)	(0.05317)	(17.2503)	(0.05123)	(0.19683)	(0.23029)
	[0.55230]	[1.75506]	[-0.67844]	[3.36824]	[-0.96848]	[0.71201]	[1.90438]	[-1.27950]
DURATION(-3)	-0.055421	-0.299061	-0.001522	0.120380	-20.59345	-0.054521	-0.377081	0.178401
	(0.46336)	(0.29656)	(0.04468)	(0.05349)	(17.3515)	(0.05153)	(0.19799)	(0.23164)
	[-0.11961]	[-1.00845]	[-0.03407]	[2.25066]	[-1.18684]	[-1.05813]	[-1.90456]	[0.77016]
DURATION(-4)	-0.155130	0.019837	0.061577	0.125952	44.09359	0.024007	0.026698	0.087286
	(0.40986)	(0.26231)	(0.03952)	(0.04731)	(15.3479)	(0.04558)	(0.17513)	(0.20489)
	[-0.37850]	[0.07562]	[1.55809]	[2.66225]	[2.87294]	[0.52676]	[0.15245]	[0.42601]

EMPLOYMENT(-1)	-0.001423	0.001795	0.000655	-9.25E-05	0.900979	0.000364	5.00E-05	0.000934
	(0.00172)	(0.00110)	(0.00017)	(0.00020)	(0.06424)	(0.00019)	(0.00073)	(0.00086)
	[-0.82937]	[1.63491]	[3.95764]	[-0.46733]	[14.0250]	[1.90776]	[0.06823]	[1.08904]
EMPLOYMENT(-2)	-0.000735	-0.001445	-0.000369	-0.000362	0.221391	-0.000577	4.93E-05	-0.001069
	(0.00215)	(0.00138)	(0.00021)	(0.00025)	(0.08046)	(0.00024)	(0.00092)	(0.00107)
	[-0.34220]	[-1.05083]	[-1.78040]	[-1.46061]	[2.75142]	[-2.41344]	[0.05374]	[-0.99479]
EMPLOYMENT(-3)	0.004206	-0.000669	-0.000152	3.72E-05	-0.002894	-2.61E-05	0.000663	-0.000567
	(0.00218)	(0.00140)	(0.00021)	(0.00025)	(0.08168)	(0.00024)	(0.00093)	(0.00109)
	[1.92855]	[-0.47928]	[-0.72438]	[0.14792]	[-0.03543]	[-0.10765]	[0.71094]	[-0.52023]
EMPLOYMENT(-4)	-0.002476	0.000197	-9.94E-05	0.000323	-0.132522	0.000261	-0.000802	0.000798
	(0.00158)	(0.00101)	(0.00015)	(0.00018)	(0.05917)	(0.00018)	(0.00068)	(0.00079)
	[-1.56681]	[0.19493]	[-0.65219]	[1.77220]	[-2.23982]	[1.48391]	[-1.18799]	[1.00994]
IP(-1)	0.820075	0.026936	0.107431	0.051557	39.71573	-0.026245	0.447335	-0.511818
	(0.53258)	(0.34086)	(0.05135)	(0.06148)	(19.9436)	(0.05922)	(0.22756)	(0.26625)
	[1.53981]	[0.07902]	[2.09192]	[0.83864]	[1.99141]	[-0.44315]	[1.96575]	[-1.92234]
IP(-2)	0.255118	-0.602191	0.104281	-0.030091	-24.17169	0.024750	0.019599	-0.026788
	(0.52242)	(0.33435)	(0.05037)	(0.06030)	(19.5629)	(0.05809)	(0.22322)	(0.26116)
	[0.48834]	[-1.80108]	[2.07011]	[-0.49899]	[-1.23559]	[0.42604]	[0.08780]	[-0.10257]
IP(-3)	-1.107627	-0.669569	0.030903	0.017730	-2.133408	0.094455	-0.198002	-0.016687
	(0.52309)	(0.33478)	(0.05044)	(0.06038)	(19.5880)	(0.05817)	(0.22351)	(0.26150)
	[-2.11748]	[-2.00003]	[0.61267]	[0.29364]	[-0.10891]	[1.62385]	[-0.88588]	[-0.06381]
IP(-4)	-1.116005	0.044529	0.014244	0.046736	5.054743	-0.011713	0.176506	0.129681
	(0.43728)	(0.27986)	(0.04217)	(0.05048)	(16.3747)	(0.04862)	(0.18684)	(0.21860)
	[-2.55217]	[0.15911]	[0.33783]	[0.92591]	[0.30869]	[-0.24089]	[0.94468]	[0.59323]
EXPORTS(-1)	0.003589	0.005400	0.022648	0.013765	3.804086	0.029719	0.218194	0.081525
	(0.15020)	(0.09613)	(0.01448)	(0.01734)	(5.62437)	(0.01670)	(0.06418)	(0.07509)
	[0.02390]	[0.05618]	[1.56376]	[0.79397]	[0.67636]	[1.77939]	[3.39990]	[1.08577]
EXPORTS(-2)	0.011642	0.008269	-0.010009	-0.014654	2.793833	0.009288	0.219853	-0.079698
	(0.14561)	(0.09319)	(0.01404)	(0.01681)	(5.45258)	(0.01619)	(0.06222)	(0.07279)
	[0.07996]	[0.08873]	[-0.71287]	[-0.87187]	[0.51239]	[0.57362]	[3.53368]	[-1.09487]
EXPORTS(-3)	0.352967	0.065942	0.006824	-0.005766	4.406611	-0.015638	0.161537	-0.448310
	(0.14935)	(0.09559)	(0.01440)	(0.01724)	(5.59283)	(0.01661)	(0.06382)	(0.07466)
	[2.36330]	[0.68986]	[0.47385]	[-0.33445]	[0.78790]	[-0.94158]	[2.53126]	[-6.00434]
EXPORTS(-4)	-0.220498	0.143480	0.013356	0.009357	-1.507456	0.032321	-0.004510	0.215087
	(0.15293)	(0.09788)	(0.01475)	(0.01765)	(5.72679)	(0.01701)	(0.06535)	(0.07645)
	[-1.44182]	[1.46592]	[0.90570]	[0.53004]	[-0.26323]	[1.90059]	[-0.06902]	[2.81333]
IMPORTS(-1)	-0.217293	-0.048213	0.002453	0.013285	-2.404243	-0.000588	-0.079207	0.573220
	(0.12824)	(0.08208)	(0.01237)	(0.01480)	(4.80234)	(0.01426)	(0.05480)	(0.06411)
	[-1.69437]	[-0.58742]	[0.19834]	[0.89745]	[-0.50064]	[-0.04120]	[-1.44546]	[8.94102]
IMPORTS(-2)	0.088230	-0.070039	-0.018786	-0.015404	-4.248128	-0.026766	-0.037644	0.256942
	(0.13030)	(0.08339)	(0.01256)	(0.01504)	(4.87919)	(0.01449)	(0.05567)	(0.06514)
	[0.67715]	[-0.83989]	[-1.49522]	[-1.02416]	[-0.87066]	[-1.84735]	[-0.67615]	[3.94463]
IMPORTS(-3)	0.462341	0.059192	0.012025	-0.005107	8.349501	0.011456	-0.067418	-0.443913
	(0.13138)	(0.08408)	(0.01267)	(0.01517)	(4.91968)	(0.01461)	(0.05614)	(0.06568)
	[3.51919]	[0.70398]	[0.94920]	[-0.33675]	[1.69716]	[0.78416]	[-1.20099]	[-6.75896]
IMPORTS(-4)	-0.292966	0.191515	0.019904	0.013164	-3.638371	0.022838	0.051716	0.236421
	(0.13090)	(0.08378)	(0.01262)	(0.01511)	(4.90170)	(0.01456)	(0.05593)	(0.06544)
	[-2.23814]	[2.28605]	[1.57696]	[0.87125]	[-0.74227]	[1.56900]	[0.92465]	[3.61291]
C	0.050260	0.030552	-0.023654	-0.006989	3.338609	0.062475	-0.013032	0.053304
	(0.17855)	(0.11427)	(0.01722)	(0.02061)	(6.68604)	(0.01985)	(0.07629)	(0.08926)
	[0.28150]	[0.26737]	[-1.37391]	[-0.33909]	[0.49934]	[3.14665]	[-0.17082]	[0.59719]

Table 5: Estimated VAR specification

	CCI	Duration	Employment	Exports	Help	Hours	Imports	IP
R-squared	0.911618	0.987354	0.987966	0.931400	0.997156	0.365399	0.481499	0.602840
Adj. R-squared	0.904820	0.986381	0.987040	0.926123	0.996937	0.316583	0.441614	0.572290
Sum sq. resids	4542.727	1860.750	42.23833	60.52946	6370147.	56.17213	829.3807	1135.305
S.E. equation	3.304545	2.114936	0.318645	0.381449	123.7451	0.367463	1.411986	1.651999
F-statistic	134.0893	1014.990	1067.288	176.5041	4558.023	7.485307	12.07226	19.73243
Log likelihood	-1156.655	-956.2777	-106.4539	-187.2295	-2783.348	-170.4572	-774.8692	-845.3572
Akaike AIC	5.299130	4.406582	0.621175	0.980978	12.54498	0.906268	3.598527	3.912504
Schwarz SC	5.600983	4.708435	0.923028	1.282830	12.84683	1.208121	3.900379	4.214357
Mean dependent	-0.132670	-3.543956	-0.015410	0.004826	14.35324	0.064043	-0.004136	0.011717
S.D. dependent	10.71120	18.12290	2.799061	1.403402	2235.995	0.444499	1.889570	2.526008
Determinant Residual Covariance		1493.930						
Log Likelihood (d.f. adjusted)		-6737.735						
Akaike Information Criteria		31.18813						
Schwarz Criteria		33.60295						

Table 6: Cointegrating coefficients

Cointegrating relationships

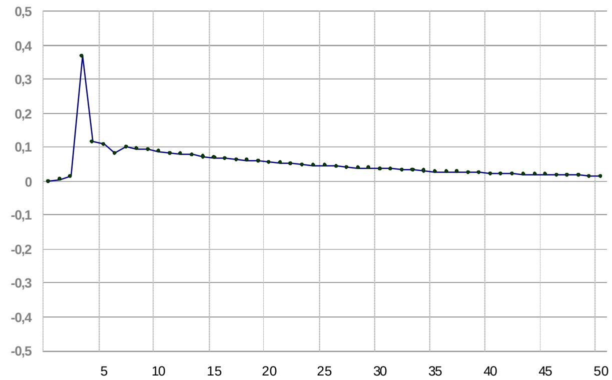
EC_CCI	EC_HELP	EC_HOURS	EC_DURATION	EC_EMPLOYMENT	EC_IP	EC_EXPORTS	EC_IMPORTS
1.000000	-0.013518	**10.19115**	4.907089	-0.004987	**-315.0075**	**12.89071**	1.773594
	(0.46754)	(6.09457)	(7.03645)	(0.00899)	(31.2310)	(6.17422)	(4.68778)

Cointegrating relationships

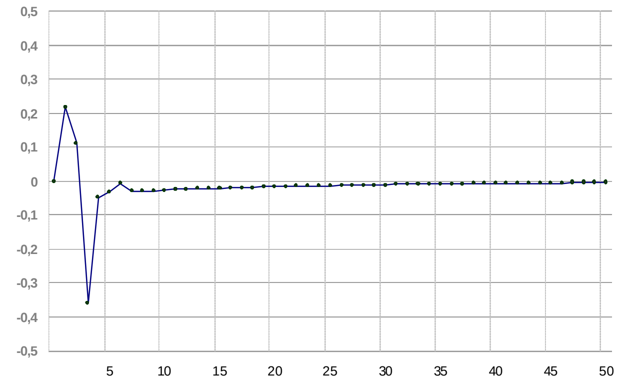
EC_CCI	EC_EMPLOYMENT	EC_IP	EC_EXPORTS	EC_IMPORTS	EC_DURATION	EC_HELP	EC_HOURS
1.000000	0.000000	0.000000	**-68.19938**	**-59.45364**	3.512263	**2.098252**	-4.969994
			(11.7154)	(8.88268)	(12.6032)	(0.77138)	(5.22753)
0.000000	1.000000	0.000000	**10268.14**	**8718.272**	1190.430	**-371.4596**	-234.7671
			(1656.12)	(1255.68)	(1781.63)	(109.044)	(738.977)
0.000000	0.000000	1.000000	**-0.419991**	**-0.332398**	-0.023275	**0.012585**	-0.044413
			(0.06685)	(0.05069)	(0.07192)	(0.00440)	(0.02983)

Charts 3a – 3f: Time profiles of direct welfare effects

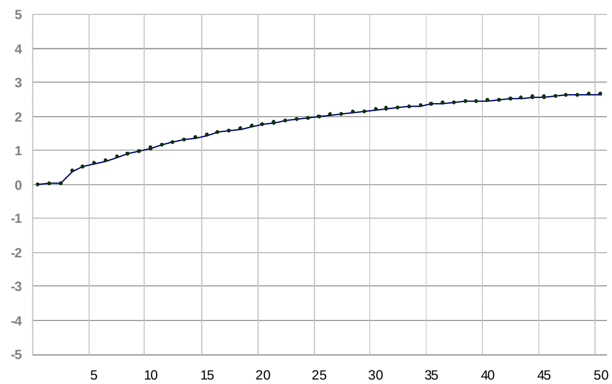
Time profile of response of Consumer Confidence Indicator for a **temporary** deviation from trend of **exports** by 1 unit in period t = 0



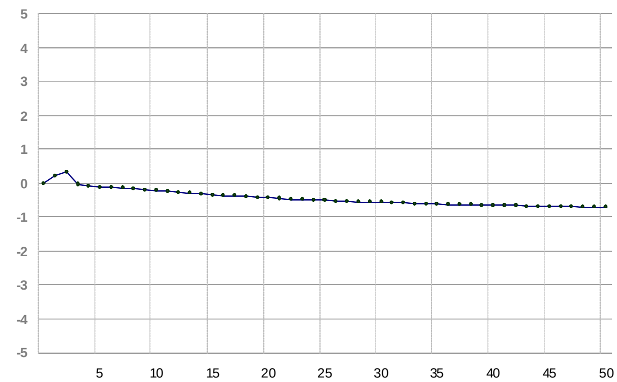
Time profile of response of Consumer Confidence Indicator for a **temporary** deviation from trend of **imports** by 1 unit in period t = 0



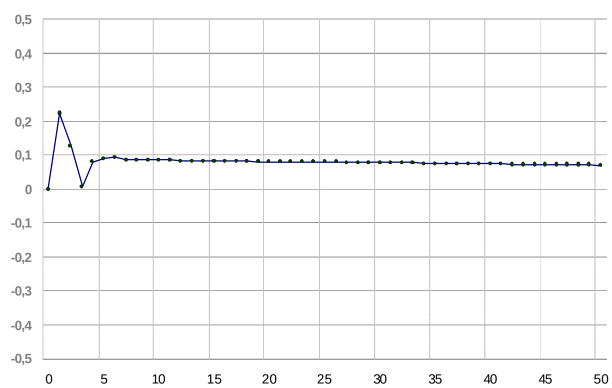
Time profile of response of Consumer Confidence Indicator for a **permanent** deviation from trend of **exports** by 1 unit since period t = 0



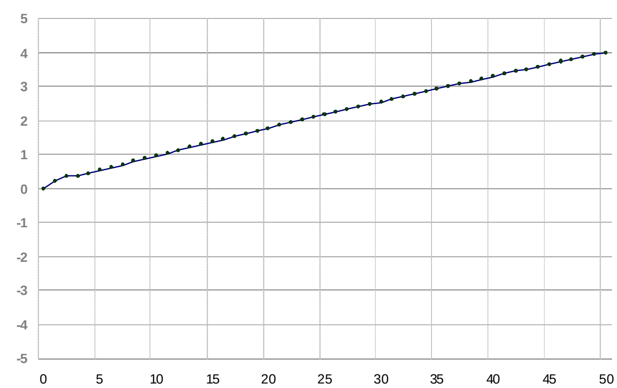
Time profile of response of Consumer Confidence Indicator for a **permanent** deviation from trend of **imports** by 1 unit since period t = 0



Time profile of response of Consumer Confidence Indicator for a **temporary** symmetric deviation from trend of both **exports** and **imports** by 1unit at period t = 0

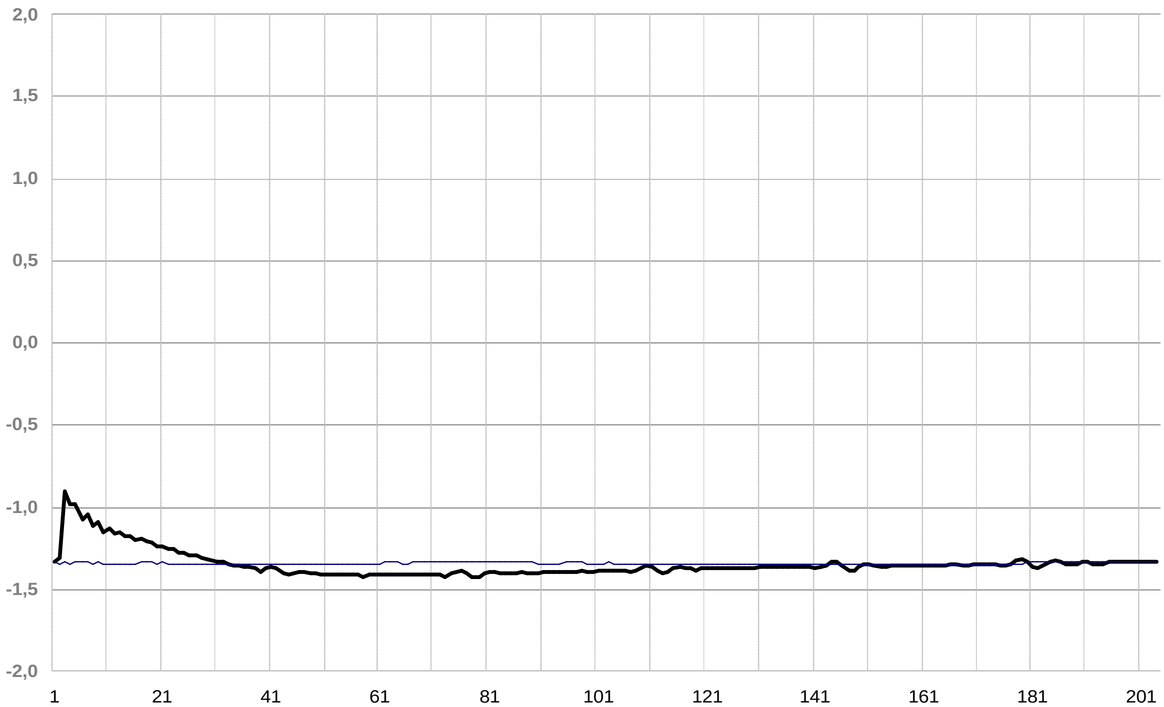


Time profile of response of Consumer Confidence Indicator for a **permamnent** symmetric deviation from trend of both **exports** and **imports** by 1unit since period t = 0

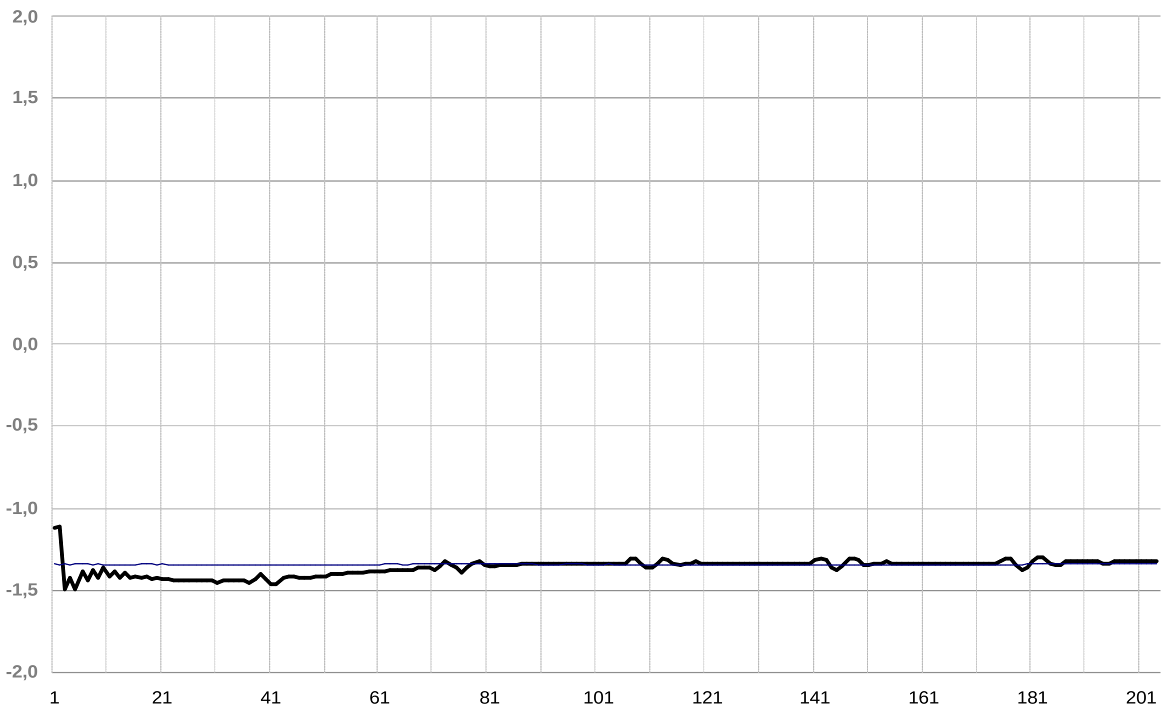


Charts 4a – 4b: Time profiles of total welfare effects

Time profile of a total response of Consumer Confidence Indicator for a **temporary** deviation from a trend of **exports** by 1unit at period t = 0

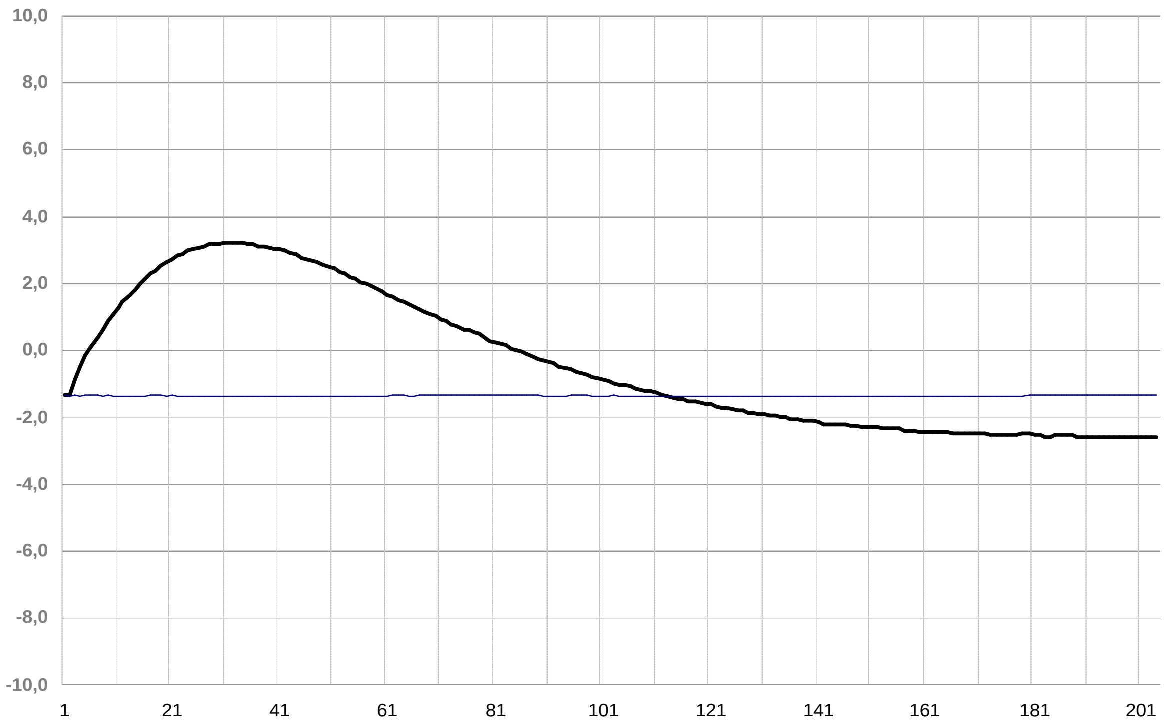


Time profile of a total response of Consumer Confidence Indicator for a **temporary** deviation from a trend of **imports** by 1unit at period t = 0

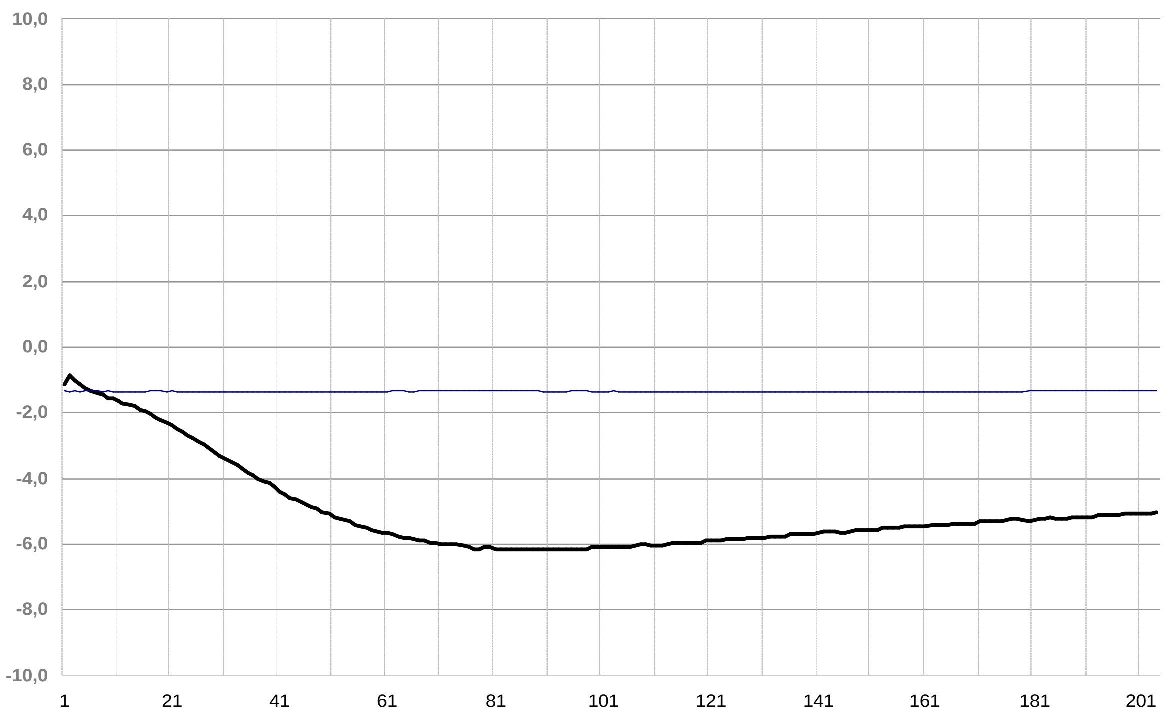


Charts 4c – 4d: Time profiles of total welfare effects

Time profile of a total response of Consumer Confidence Indicator for a **permanent** deviation from a trend of **exports** by 1unit at period t = 0

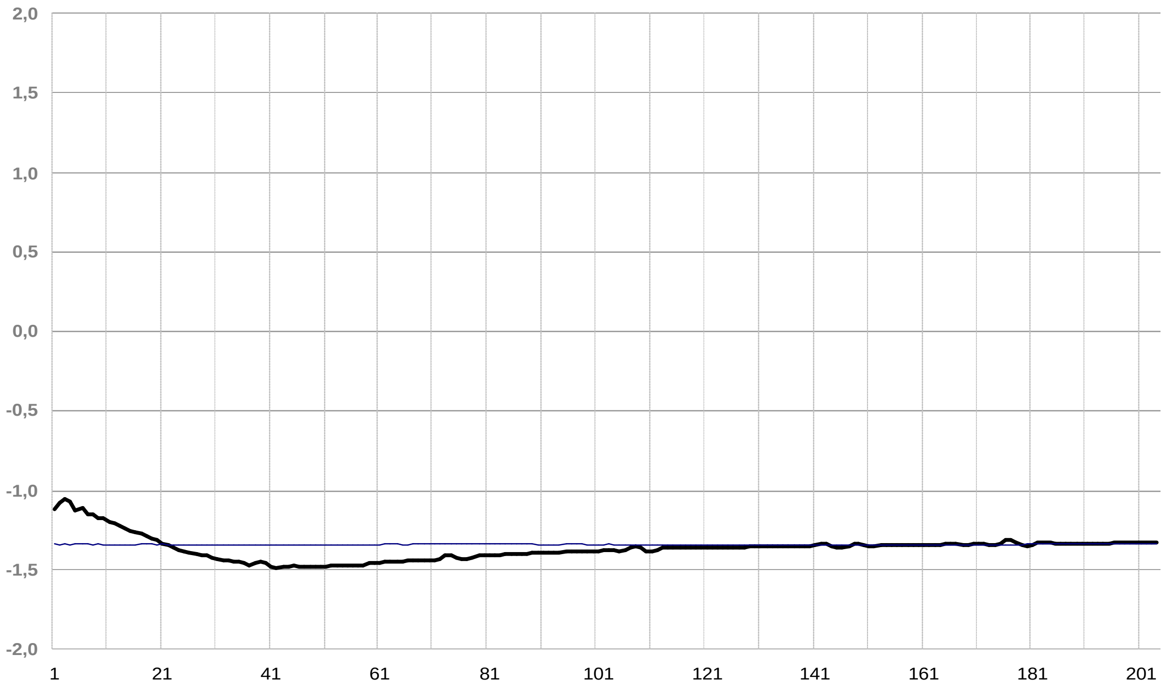


Time profile of a total response of Consumer Confidence Indicator for a **permanent** deviation from a trend of **imports** by 1unit at period t = 0

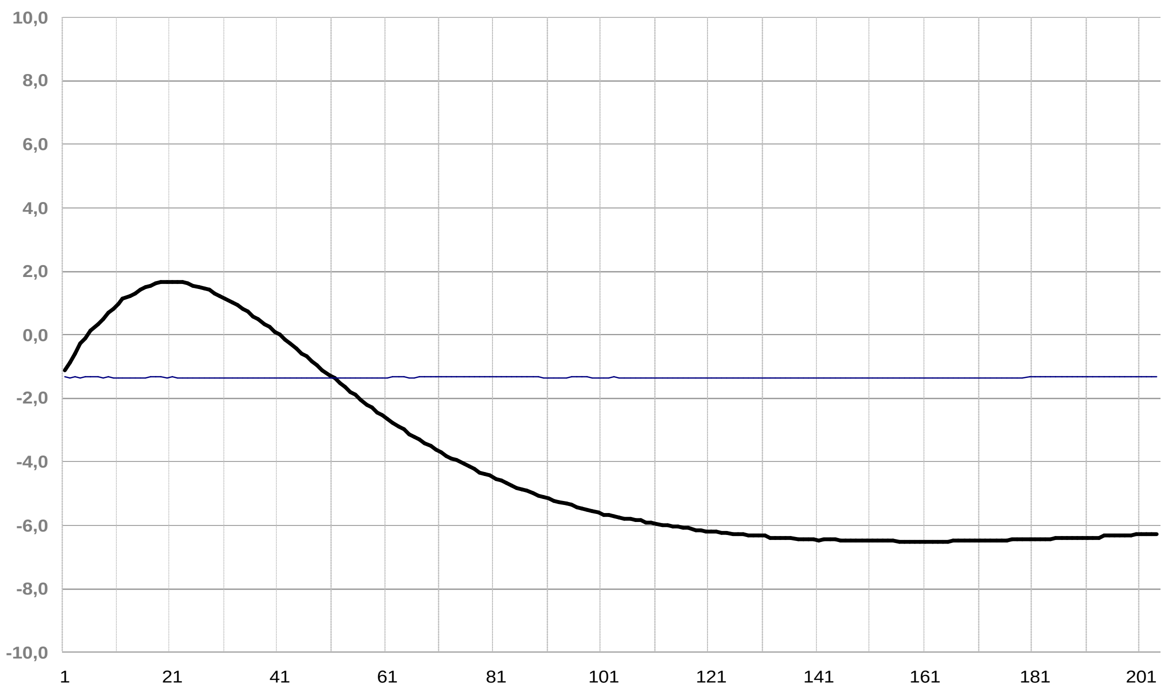


Charts 4d – 4e: Time profiles of total welfare effects

Time profile of a total response of Consumer Confidence Indicator for a **temporary** symmetric deviation from trends by both **exports** and **imports** by 1unit at period t = 0

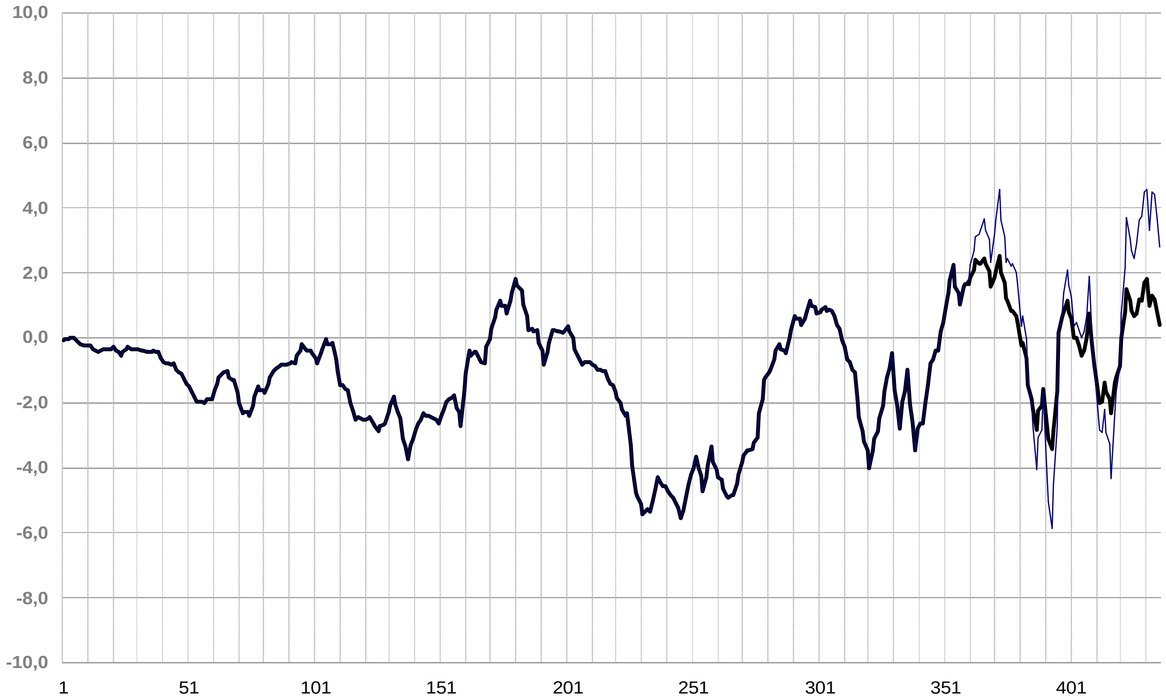


Time profile of a total response of Consumer Confidence Indicator for a **permanent** symmetric deviation from trends by both **exports** and **imports** by 1unit at period t = 0

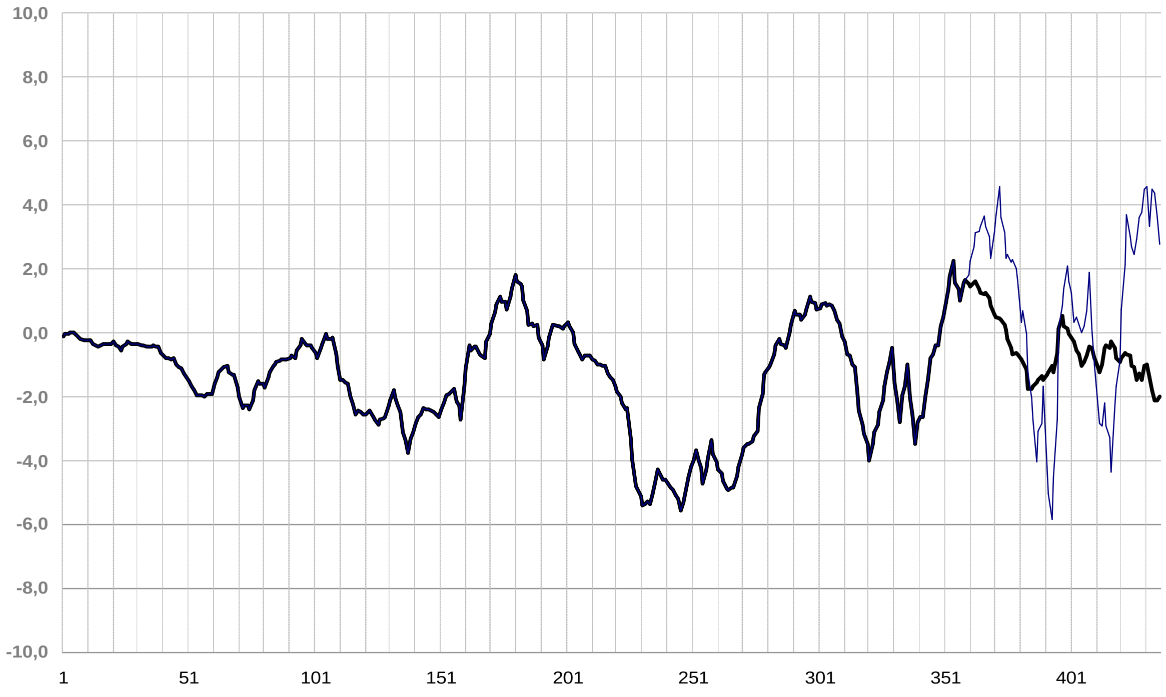


Charts 5a – 5b: Simulated changes in perceived welfare

Deviations from trend of Consumer Confidence Indicator replicated using reduced **exports** and **imports** by 50% beginning January 1999 (thick line), thin line stands for data replicated using actual data on exports and imports.

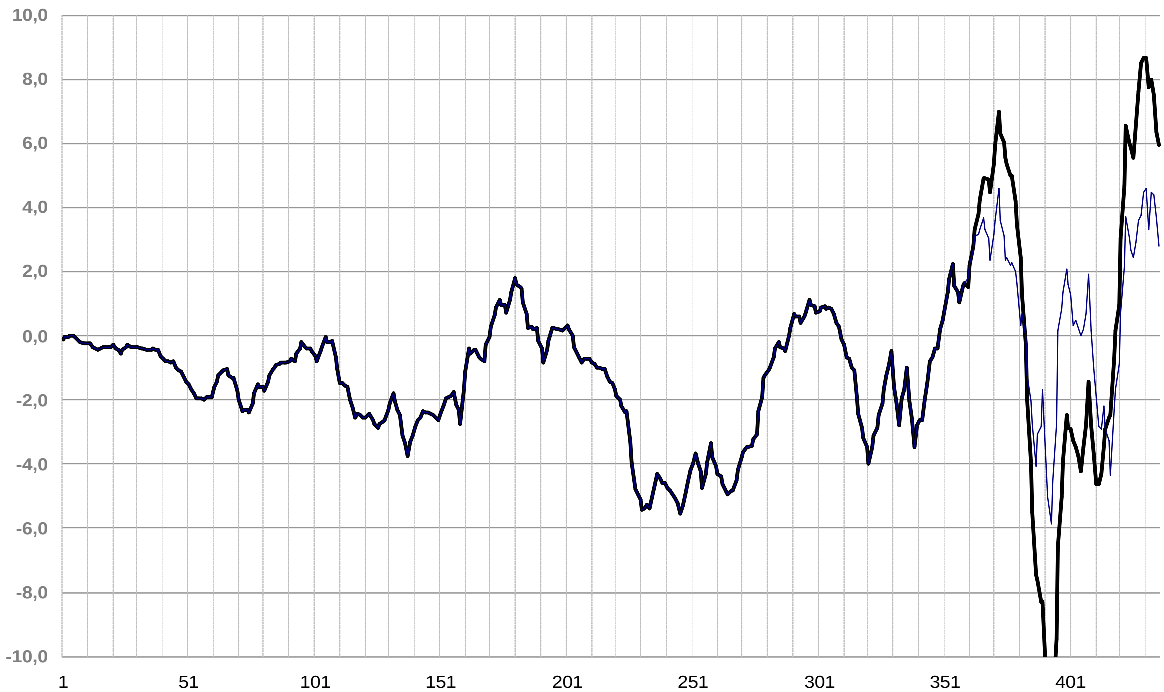


Deviations from trend of Consumer Confidence Indicator replicated using both **exports** and **imports** reduced by 100% beginning January 1999 (thick line), thin line stands for data replicated using actual data on exports and imports.



Charts 5c – 5d: Simulated changes in perceived welfare

Deviations from trend of Consumer Confidence Indicator replicated using reduced **exports** by 50% beginning January 1999 (thick line), thin line stands for data replicated using actual data on exports and imports.



Deviations from trend of Consumer Confidence Indicator replicated using reduced **imports** by 50% beginning January 1999 (thick line), thin line stands for data replicated using actual data on exports and imports.