Workers and Trade Liberalization: Simulating the Potential Impact of the Free Trade Agreement of the Americas on Venezuela's Output and Wages

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The Specific Factors model of international trade is used to produce comparative statics elasticities of changing prices on factor prices and output for Venezuela as a result of the emerging Free Trade Agreement of the Americas (FTAA). Unskilled labor stands to gain from free trade characterized by increased manufacturing exports and falling prices of imported business services, while skilled labor lose. Return to capital falls in sectors exposed to increased import competition while increases in sectors expected to enjoy higher export demand.

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1. Introduction

The Free Trade Agreement of the Americas (FTAA), an initiative to unite the economies of North, Central, and South America, is expected to be fully operational by 2005. Free trade constitutes an important part in the agenda of most Andean countries[1] as they prepare their economies to face increase competition from more developed and efficient economies. As a small open economy like Venezuela reorganizes along its production possibilities frontier to face international prices, income is redistributed among factors of production, generally away from expensive and scarce factors relative to trading partners. This paper uses the Specific Factors (SF) model of production to examine the potential impact of the FTAA on Venezuela's output and wages.

The current turmoil in Venezuela accompanied by years of protectionist trade policies makes this economy which greatly depends on oil, more vulnerable to free trade relative to other Andean economies. Over the last 30 years, economic growth in Venezuela has been closely linked to higher oil prices, while economic downturns to low oil prices. Despite the risks involved in being highly dependent on oil, Venezuela has not being able to diversify its economy, in fact, according to the World Bank, the share of oil-GDP to total GDP increased by almost 24 % over a period of 10 years, from 21% in early 1990 to 25 % in late 1990.

[1] The Community of Andean Countries (CAN) is composed by Bolivia, Colombia, Ecuador, Peru, and Venezuela.

In 1999 the government of President Hugo Chavez acted quickly and developed new economic policies in an attempt to jump-start the economy. Government expenditures were reduced including investment expenditures of government enterprises and in agreement with OPEC, oil production was also cut in order to increase world oil prices. Among other economic policies implemented at the time were the exchange rate band system designed to maintain a strong exchange rate policy, the promotion of private investment, and poverty alleviation, which helped Venezuela enjoy its first sign of economic recovery in early 2000. GDP in 2000 grew 3 % relative to the decline of 7.2 % the year before.

The Venezuelan economic recovery in 2000 was, as in the past, linked to high world oil prices, making the recovery fragile and exposing it to external shocks. As the economy increased its dependency on oil, the share of agriculture to total GDP decreased from 6 % in early 1990 to 4 % in late 1990, over the same period of time, the share of manufacturing to GDP fell from 13 % to 10 % while the service sector remained strong with a share of 60 % of GDP.

This paper projects the income redistribution and output adjustment due to free trade using a specific factor model of the Venezuelan economy. The Specific Factor model of international trade is a general equilibrium model of production in which each sector employs one specific factor and shares common factors with every other sector. Using micro data provided by the National Institute of Statistics of Venezuela and the International Labor Organization for the year 2000, I examine the comparative statics of a general equilibrium model of production in four sectors of the Venezuelan economy: agriculture, mining, manufacturing, and services. Skilled and unskilled labor are shared inputs in the four sectors and capital is specific in each sector. The model assumes full employment of all factors of production and labor is perfectly mobile across sectors. There is perfect competition in the output markets with costs equal to price. The paper derives the effects of projected price changes on factor prices and output, and discusses implications for economic policy.

The competitive model assumes production functions with constant elasticity of substitution. The comparative static model is based on factor shares and industry shares. Thompson (1996) examined the effects of NAFTA in a specific factor model of Alabama, and Thompson and Toledo (2001) analyzed the effects of a potential merger between the Andean Market and MERCOSUR in a Specific Factor model for Bolivia.

Simulation in the present study is based on observed factors shares and industry shares that can be derived directly from the data provided by the National Institute of Statistics of Venezuela for agriculture, mining, manufacturing, and services. The question is how Venezuela would adjust to liberalization after years of protection, and how different sectors of the economy may be affected. Computable General Equilibrium (CGE) models can address the issue of output adjustment and income redistribution caused by changing prices with free trade.

Using factor and industry shares from Venezuelan data, constant elasticity production functions and constant returns to scale are assumed. The simple CGE model will produce elasticities of factor prices with respect to the prices of traded goods for four sectors of the Venezuelan economy. The model has skilled labor, unskilled labor, and capital for each sector. Skilled and unskilled labor are factors shared in the four sectors. Capital is specific in the sense that capital used in one sector cannot be used in another.

2. Factor Shares and Industry Shares in Venezuela

Table 1 provides the total payment matrix in domestic currency for each of the six factors of production:

S skilled labor

U unskilled Labor

Kj capital in each sector

A agriculture

M mining

F manufacturing

V services

One of the most important pieces of information in the data is the total payment to each productive factor in each of the four sectors. Treating the wage of skilled and unskilled labor as the average wage in the five industries separates payment to skilled and unskilled labor. Capital payments are derived as residuals of sector value added after labor payments. The foundation of the model is the total payment matrix to each productive factor in each of the four sectors.

Table 2 presents shares of each factor in the revenue of each sector. Summing down a column in Table 1 gives total sector revenue. For instance, the total revenue of agriculture in Venezuela is 28,820 million Bolivares and the share of skilled labor is 3,240 / 28,820 = 0.112 = 11.2 %. Assuming equal skilled wages across sectors, 11.2% of skilled workers will be in agriculture. Similarly, the share of unskilled workers in Venezuela is 7,410 / 28,820 = 0.257 = 25.7%. Assuming equal unskilled wages across sectors, 25.7% of unskilled workers will be in agriculture. The implicit share of each type of capital is 1 in its sector and 0 in all other sectors. Agricultural land is implicit in that capital residual. The Specific Factor model implies an implicit zero share for each type of capital in every sector except its own.

Industry shares for labor are presented in Table 3. Summing across a row in

Table 1 gives total factor income. Assuming perfect labor mobility across sectors, the wage of each type of labor would be the same across sectors. The resulting industry shares are the portions of each factor employed in each sector. For instance, the total income of skilled labor is 153,135 million Bolivares, and 3,240 / 153,135 = 0.021 = 2.1% of this total income is earned in agriculture.

Factor intensities are in Table 4. Mining uses skilled labor the least intensively relative to both skilled labor and capital. Capital intensity refers to each specific capital. The service sector uses skilled labor the most intensively relative to other inputs. The service sector is also the sector that uses unskilled labor the least intensive. Agriculture and mining are closed to each other in skilled labor intensity but differ significantly in unskilled labor intensity where mining uses about half as much unskilled labor than manufacturing.

3. A Specific Factor Model of Production for Venezuela

Substitution elasticities describe the change in the cost minimizing input of one factor given a change in the price of another, as developed by Jones (1965) and Takayama (1982).

Following Allen (1938), the cross-price elasticity between the input of factor *i* and the payment to factor *k* is sector *j* can be written

$$E_{ij}^{k} = \hat{a}_{ij} / \hat{w}_{k} = \theta_{kj} S_{ij}^{k} \qquad (1)$$

where ^ represents and percentage change in a variable, and S_{ij}^{k} is the Allen partial elasticity of substitution from the production function. With Cobb-Douglas production functions, the partial elasticities of substitution must equal one: $S_{ij}^{k} = 1$. Homogeneity means that $\sum_k E_{ij}^{k} = 0$, and the own price elasticity E_{ij}^{i} is found as the negative of the sum of the cross-price elasticities. Since the cross price elasticity is a weighted Allen elasticity, with Cobb-Douglas production functions it follows that the cross price elasticity is equal to the factor share.

The aggregate substitution elasticities for the economy are the weighted average of the cross-price elasticities for each sector. In other words, elasticities are summed across industries to arrive at the aggregate substitution elasticities, as described by Thompson (1994):

$$\sigma_{ik} \equiv \hat{a}_i / \hat{w}_k = \Sigma_j \lambda_{ij} E_{ij}^{k} = \Sigma_j \lambda_{ij} \theta_{kj} S_{ij}^{k} . \tag{2}$$

Factor shares and industry shares can be used to derive the aggregate elasticities of substitution for each Cobb-Douglas production function in Table 5. Constant elasticity of substitution (CES) production would scale the elasticities in Table 5. With CES of 0.5, for instance, elasticities would be half as large as in Table 5. With CES of 2, they would be twice as large. The largest own substitution elasticity occurs for unskilled labor and the smallest for capital in agriculture as shown in Table 5. Every 1% increase in the unskilled wages causes 0.78 % decrease in the unit input of unskilled labor. Every 1% increase in the price of agriculture capital decreases its unit input by 0.19 %. Own labor substitution elasticities are larger than own capital elasticities. All three factors, skilled and unskilled labor, and capital are relatively inelastic inputs.

Competitive pricing and full employment are stated

$$\Sigma_j a_{kj} x_j = v_k , \tag{3}$$

$k = S, U, K_A, K_M K_F, K_V$

$$\Sigma_i a_{im} w_i = p_m, \tag{4}$$

$m = A, M, F, V,$

where a_{ij} is the cost minimizing input of factor i in sector j, x_j is the output of good j, v_k is the endowment of factor k, w_i is the price of factor i, and p_m is the price of good m. As developed in the literature, for instance, Takayama (1982), fully differentiating (3) and (4) leads to

$$\Sigma_i \sigma_{ki} \hat{w}_i + \lambda_{kj} \hat{x}_j = \hat{v}_k, \tag{5}$$

$k = S, U, K_A, K_M, K_F, K_V$

$$\Sigma_i \theta_{im} \hat{w}_i = \hat{p}_m, \tag{6}$$

$m = A, M, F, V,$

Equations (6) is simplified by the cost minimization assumption and the six equations in (5) and (6) can be put into matrix form as

$$\begin{bmatrix} \sigma & \lambda \\ \theta' & 0 \end{bmatrix} \begin{bmatrix} \hat{w} \\ \hat{x} \end{bmatrix} = \begin{bmatrix} \hat{v} \\ \hat{p} \end{bmatrix} \tag{7}$$

where σ is the 6 x 6 matrix of elasticities of substitution, λ is the 6 x 4 matrix of industry shares, and θ' is 4 x 6 the matrix of factor shares. Note that endowments are held constant. The ^ represents percentage changes. Vectors of factor prices, output, factor endowments, and prices are represented by w, x, v, and p.

The 10 x 10 matrix in (7) relates exogenous percentage changes in factor endowments and prices to endogenous percentage change in factor prices and output. Output and factor prices adjust to maintain the full employment and competitive pricing conditions in the comparative statics of the general equilibrium model. The model will show the general equilibrium effects of changing prices on factor prices and output.

The model's comparative static elasticities $\hat{w}/\hat{p}$ and $\hat{x}/\hat{p}$ are found by inverting (7). For reference, the inverse of 7 is given by 8:

$$\begin{bmatrix} \hat{w} \\ \hat{x} \end{bmatrix} = \begin{bmatrix} M & N \\ Q & R \end{bmatrix} \begin{bmatrix} \hat{v} \\ \hat{p} \end{bmatrix} \tag{8}$$

Matrix *M* describes how factor prices are affected by changing endowments with prices constant. Matrix *Q* captures the effects of changing endowments on outputs, known as the Rybczynski result. Each row in *Q* has at least one positive element, which means that each output is positively related to at least one factor endowment.

Matrix *N* describes how changing prices affect factor prices, the traditional Stolper-Samuelson result. Because reciprocity occurs between the Stolper-Samuelson and the

Rybczynski results, elasticities between Q and N are symmetric in sign. Reciprocity occurs because $\partial w_i / \partial p_i = \partial x_j / \partial v_i$.

Matrix R describes a local surface of production possibilities. Each output should be positively related with its own price, and some other outputs must decline with unchanged factor endowments. This research is concerned with matrix N and matrix R.

4. Comparative Static Elasticities in the Venezuelan Model

Table 6 shows elasticities of factor prices with respect to prices of goods in the general equilibrium comparative statics. As an example, a 10 % decrease in agricultural prices would lower skilled wages by 0.14 % and unskilled wages by 1.39 %. Payment to capital in agriculture would fall by 15.06 %, a significant impact for capital owners. The lower price of agricultural products would decrease agricultural output and released unskilled labor. Movements of labor to other sectors would cause the return to capital in those sectors to rise.

A 10 % increase in the price of minerals would raise the wages of skilled labor by 0.05 % and wages of unskilled labor by 2.2 % while the capital return in mining rises by 16.21 %. Capital owners, and to a lesser degree skilled and unskilled labor benefit with a higher price in the mining industry.

A higher price in a sector increases its capital return but lowers the return in other sectors. While some factors benefit and others lose with any price change, the benefits are uneven. Price changes affect the returns to specific capital more than shared labor.

Thompson and Toledo (2000) proved that the comparative static effects of price changes on factor prices are the same for al CES production functions. Comparative statics elasticities in Table 6 extend to all CES production functions regardless of the degree of substitution. The degree of substitution, if it is constant along the isoquants, does not affect the general equilibrium elasticities of prices of factor prices in competitive models of production.

Table 7 shows the price elasticities of outputs along the production frontier. A higher price raises output in a sector, drawing labor away from other sectors and lowering other outputs. For example, the largest own output effect occurs in manufacturing, where a 10 % price increase would raise output by 7.19 %, however all the effects are inelastic and the smaller effect occurs in agriculture where a 10 % increase in price raise output by only 2.83 %.

5. Projected Price Changes and Adjustments for Venezuela

In a study conducted by Bolivia's Department of Economic Policy (1998), expected price changes as a result of the FTAA were estimated for countries in the Andean region and are used in the present study. Predictions include higher prices for mining and manufacturing due to an increased export demand. Prices of minerals are expected to increase by as much as 4 % and manufacturing by 30 %. Import competition will lower prices in agriculture and services. Agricultural prices are expected to fall by as much as 12 % and services prices as much as 20 %. These price projections are based on comparisons of similar products in surrounding countries. A sensitivity analysis is conducted with various price changes.

The effect of changing prices on the Venezuelan economy depends on the relative magnitudes of factor shares and industry shares, and input substitution as output adjusts. The results expected are gains for sectors that will experience high export prices due to an increase in export demand. On the other hand, sectors that will experience increased competition are expected to be losers due to lower prices.

The vector of projected price changes is multiplied by the matrix of factor price elasticities in Table 6 to find the vector of price adjustments in Table 8. This is presented by equation (9).

$$\left[N_{6x6}\right]\begin{bmatrix}\hat{p}_A\\ \hat{p}_M\\ \hat{p}_F\\ \hat{p}_V\end{bmatrix} = \begin{bmatrix}\hat{w}_S\\ \hat{w}_U\\ \hat{w}_A\\ \hat{w}_M\\ \hat{w}_F\\ \hat{w}_V\end{bmatrix} \tag{9}$$

where N represents the Stolper-Samuelson elasticities and the $\hat{p}$ the vector of projected price changes.

Skilled wages are projected to fall by 12.5 % mainly due to falling prices in the services sector, which is skilled labor intensive. Despite falling prices in agriculture, unskilled wages are expected to increase by 5.9 % mainly due to higher manufacturing prices which are expected to increase by as much as 30 % while agricultural prices to fall by 12 %. Factor intensities play a role in determining the direction of change in skilled wages as manufacturing is much more skilled labor intensive than agriculture while unskilled labor intensities is about the same. Other losers in Venezuela due to the FTAA would be capital in services and agriculture with returns declining by 32.8 % in the case of the latter and 19.0 % in the case of the former. The FTAA will benefit return to capital in mining and manufacturing by 5.6 % and 63.3 % respectively. The impact of the FTAA on the return to capital in manufacturing is very significant.

Similarly, the effects of the FTAA on outputs are also in Table 8, and are found by multiplying the output elasticities of Table 6 by the projected vector of price changes as in equation (10).

$$[R_{4x4}]\begin{bmatrix}\hat{p}_A\\ \hat{p}_M\\ \hat{p}_F\\ \hat{p}_V\end{bmatrix} = \begin{bmatrix}\hat{x}_A\\ \hat{x}_M\\ \hat{x}_F\\ \hat{x}_V\end{bmatrix} \qquad (10)$$

where *R* represents production possibilities elasticities from (8).

Agricultural output is expected to fall by 2.8 % and services sector output by 12.8 %. Mining output is predicted to rise by 1.6 % while output in manufacturing by 33.3 %.

Projected output adjustments are large. The model projects revenue in services will fall by 32.8 % due to lower prices and falling output. The services sector represents about 60 % of Venezuela's GDP. The agricultural sector represents about 4 % of Venezuela's GDP and revenue in the agricultural sector is expected to fall by 19.0 % due to lower prices and falling output. The model projections indicate that firms in the agricultural and services sectors will find it difficult to survive. The need for joint ventures or partnerships among domestic agricultural and services firms with more efficient foreign companies could become an attractive alternative for some Venezuelan companies as a way to withstand the increased competition. Falling output in agriculture and services may prompt the Venezuelan economy to become even more dependent on oil.

To gain additional insight into the sensitivity, more conservative price changes are used in Table 9. The resulting decline in skilled wages is about three fourth smaller, while the expected increase in unskilled wages is about one fifth higher relative to that shown in Table 8. Effects on capital returns are about the same for mining but differ substantially for agriculture, manufacturing, and services.

Table 10 shows factor price and output adjustments with CES production. Projected price changes from Table 8 are used under two different assumptions: when
CES = 0.5 and CES = 2. Factor price adjustments remain large. Output adjustments are larger with the higher degree of substitution.

6. Conclusion

Neoclassical international trade theory emphasizes the gains in welfare with free trade. In factor proportions trade theory, gains are broken down into factoral income redistribution.

This article uses the Specific Factor model to project the magnitude of output changes and income redistribution for skilled labor, unskilled labor, and capital in four sectors of the Venezuelan economy due to the emerging FTAA.

The model used in this research offers preliminary results consistent with quantitative analysis in the literature. The main implication of the Specific Factor model is that when the relative price of an output changes, markets for inputs adjust as the economy moves along its PPF toward a new production pattern. An increase in the price of goods in one industry tends to increase the return to capital in that sector and decrease the return to capital in all other sectors. The reason is that shared skilled and unskilled labor move into this industry in response to higher wages, creating a shortage of labor in other sectors of the economy. With less labor available in other sectors of the economy, production and return to capital fall.

Venezuelan agriculture and services are projected to suffer falling prices with the FTAA, while minerals and manufacturing are projected to enjoy higher prices. Resulting output adjustments in the Specific Factor model are quite large, ranging from an average decrease of almost 33 % in services to an average increase of 63 % in manufacturing.

Projected factor price adjustments are also large. Skilled wages would fall with the move to free trade while unskilled wages will increase. The share of skilled labor in the economy is small except in the manufacturing and services sectors and the service sector is projected to lose due to increased import competition. The return to capital in manufacturing and mining is projected to increased by 63.3 % and 5.6 % respectively. Returns to capital in the agriculture and services sectors are projected to fall by 19 % and 32.8 % respectively.

Increased investment in a competitive and more efficient Venezuelan economy could result in higher income in the long run for every factor of production. The benefits of free trade from increased competition and efficiency have been extensively documented in the literature, results in the present model are by no means intended to avoid free trade, rather, they should be used to recognize that various sectors and factors of production in the Venezuelan economy will lose with the FTAA at least prior to retraining and long run economic growth. Policies designed to anticipate the effects of income redistribution my ease the political struggle to establish the FTAA.

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Table 1

Factor Payment Matrix, 2000
(In Millions of Bolivares)

	A (Agriculture)	M (Mining)	F (Manufacturing)	V (Services)	Total
S	3,240	480	24,693	124,722	153,135
U	7,410	1,710	15,495	19,470	44,085
K	18,170	2,920	42,674	111,912	175,676
Total	28,820	5,110	82,862	256,104	

Table 2

Factor Shares, θ_{ij} , 2000

	A	M	F	V
S	0.112	0.094	0.298	0.487
U	0.257	0.335	0.187	0.076
K_A	0.630	0	0	0
K_M	0	0.571	0	0
K_F	0	0	0.515	0
K_V	0	0	0	0.437

Table 3

Industry Shares, λ_{ij} , 2000

	A	M	F	V
S	0.021	0.003	0.161	0.814
U	0.168	0.039	0.351	0.442
K_A	1	0	0	0
K_M	0	1	0	0
K_F	0	0	1	0
K_V	0	0	0	1

Table 4

Factor Intensities, 2000

	S/K_j	U/K_j	S/U
Agriculture	0.178	0.408	0.437
Mining	0.164	0.586	0.280
Manufacturing	0.579	0.363	1.594
Services	1.114	0.174	6.406

Table 5

Cobb-Douglas Substitution Elasticities, σ_{ik}, 2000

	$\hat{w}_S$	$\hat{w}_U$	$\hat{w}_{KA}$	$\hat{w}_{KM}$	$\hat{w}_{KF}$	$\hat{w}_{KV}$
$\hat{a}_S$	-0.783	0.329	0.013	0.002	0.083	0.356
$\hat{a}_U$	0.342	-0.868	0.106	0.022	0.181	0.193
$\hat{a}_{KA}$	0.114	0.083	-0.197	0	0	0
$\hat{a}_{KM}$	0.094	0.335	0	-0.429	0	0
$\hat{a}_{KF}$	0.298	0.187	0	0	-0.485	0
$\hat{a}_{KV}$	0.487	0.076	0	0	0	-0.563

Table 6

Elasticities of Factor Prices with Respect to Prices, $\hat{w}/\hat{p}$

	$\hat{p}_A$	$\hat{p}_M$	$\hat{p}_F$	$\hat{p}_V$
$\hat{w}_S$	0.014	0.005	0.144	0.837
$\hat{w}_U$	0.139	0.221	0.383	0.239
$\hat{w}_{KA}$	1.506	-0.090	-0.182	-0.250
$\hat{w}_{KM}$	-0.084	1.621	-0.249	-0.280
$\hat{w}_{KF}$	-0.059	-0.080	1.719	-0.570
$\hat{w}_{KV}$	-0.039	-0.040	-0.227	1.314

Table 7

Elasticities of Outputs with Respect to Prices, $\hat{x}/\hat{p}$

	$\hat{p}_A$	$\hat{p}_M$	$\hat{p}_F$	$\hat{p}_V$
$\hat{x}_A$	0.283	-0.040	-0.084	-0.160
$\hat{x}_M$	-0.084	0.621	-0.249	-0.280
$\hat{x}_F$	-0.059	-0.080	0.719	-0.570
$\hat{x}_V$	-0.039	-0.040	-0.227	0.314

Table 8

Simulating Trade Liberalization with Cobb-Douglas Production

Predicted % Δ in Price with Trade Liberalization			Effects on Factor Prices			Output Adjustments		
$\hat{p}_A$	=	-12.0 %	$\hat{w}_S$	=	-12.5 %	$\hat{x}_A$	=	-2.8 %
$\hat{p}_M$	=	4.0 %	$\hat{w}_U$	=	5.9 %	$\hat{x}_M$	=	1.6 %
$\hat{p}_F$	=	30.0 %	$\hat{w}_A$	=	-19.0 %	$\hat{x}_F$	=	33.3 %
$\hat{p}_V$	=	-20.0 %	$\hat{w}_M$	=	5.6 %	$\hat{x}_V$	=	-12.8 %
			$\hat{w}_F$	=	63.3 %			
			$\hat{w}_V$	=	-32.8 %			

Table 9

Simulating Trade Liberalization with Cobb-Douglas Production and Smaller Projected Price Changes

Projected Price Changes			Factor Price Adjustments			Output Adjustments		
$\hat{p}_A$	=	- 6.0 %	$\hat{w}_S$	=	-2.1 %	$\hat{x}_A$	=	-1.5 %
$\hat{p}_M$	=	4.0 %	$\hat{w}_U$	=	4.6 %	$\hat{x}_M$	=	2.0 %
$\hat{p}_F$	=	15.0 %	$\hat{w}_A$	=	-10.9 %	$\hat{x}_F$	=	16.6 %
$\hat{p}_V$	=	-10.0 %	$\hat{w}_M$	=	4.7 %	$\hat{x}_V$	=	-6.5 %
			$\hat{w}_F$	=	28.7 %			
			$\hat{w}_V$	=	-9.9 %			

Table 10

Simulating Trade Liberalization with CES Production

Projected Price Changes	Factor Price Adjustments	Output Adjustments CES = 0.5	CES = 2
$\hat{p}_A =$ -12.0 %	$\hat{w}_S =$ -12.5 %	$\hat{x}_A =$ -1.4 %	$\hat{x}_A =$ -5.6 %
$\hat{p}_M =$ 4.0 %	$\hat{w}_U =$ 5.9 %	$\hat{x}_M =$ 0.8 %	$\hat{x}_M =$ 3.2 %
$\hat{p}_F =$ 30.0 %	$\hat{w}_A =$ -19.0 %	$\hat{x}_F =$ 16.7 %	$\hat{x}_F =$ 66.7 %
$\hat{p}_V =$ -20.0 %	$\hat{w}_M =$ 5.6 %	$\hat{x}_V =$ -6.4 %	$\hat{x}_V =$ -25.6 %
	$\hat{w}_F =$ 63.3 %		
	$\hat{w}_V =$ -32.8 %		