Forecasting the Resurgence of the U.S. Economy in 2010: An Expert Judgment Approach^{*}

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Abstract: This paper describes a forecast of the date of the recovery of the US economy from the contraction that began in December 2007. The forecast used an expert judgment approach (featuring 29 pairwise comparisons of the key elements in our forecasting model) within the framework of decision theory, the Analytic Hierarchy Process, as well as its generalization to dependence and feedback, the Analytic Network Process. This paper has once again demonstrated how the Analytic Hierarchy Process can serve as an additional tool for providing macroeconomic forecasts. We have based our forecast of the time period of the trough of the current economic cycle within the context of the macroeconomic conditions confronting the U.S. economy during late 2008, which had begun to experience a recession from its peak in December 2007, after an expansion of 73 months. We have concluded that the recovery would begin during the third quarter of 2010, from a trough that would be reached some 20 months forward from the date of the December 2008 forecasting exercise (and some 32 months from the previous cyclical peak, which is considerably longer than all other post-World War II contractions).

Keywords: Macroeconomic forecasting; Analytic Hierarchy Process; Expert judgment approaches to economic forecasting; Forecasting U.S. economic expansions

JEL Classifications: C53, E32, E37

1. Introduction

Building on work done earlier, Blair, et al. (2001) and Blair, et al. (2002), this paper illustrates our use of the Analytic Hierarchy Process (AHP, Saaty (2005) and Saaty (2006) to produce a December 2008 forecast of when the U.S. economy would begin to recover from the contraction that, according to an announcement dated December 1st, 2008, from the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER) (2008), began during the month of December, 2007. Our earlier forecast of the economic recovery, produced in the year 2001, Blair,

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et al. (2002), was confirmed by the NBER in July 2003 as reported in the *Wall Street Journal* by Hilsenrath (2003). As previously, we employed a conceptual framework grounded in modern macroeconomics and produced a forecast that relied upon expert judgment, without assistance from a conventional macroeconomic forecasting model.

2. The Role of Judgment in Economic Forecasting

As stated in our earlier articles, conventional approaches to macroeconomic forecasting tend to be constrained by the estimated values of parameters and intercept terms. These are imbedded in the multi-equation models that are typically employed to produce "first-cut" forecasts of relevant endogenous variables. Additionally, the values of a large number of "exogenous" variables (relating to the future course of monetary and fiscal policy, the value of exports, etc.) must be subjectively estimated on the basis of available evidence and consensus judgment. Initial forecasts produced by the raw models are then typically adjusted by "add" or "fudge" factors, most commonly in the form of shifts in the values of previously estimated intercept terms. This procedure is employed in order to produce forecasts that are consistent with recent values of key endogenous variables when it is evident that a shift of some kind has occurred in portions of the underlying model structure. Such exercises also provide ample opportunity for resetting the values of exogenous variables.

Thus, and as stated in our earlier papers, this suggests that macroeconomic model builders/forecasters are well aware of the limitations of their underlying models and the need to incorporate subjective judgments. However, these judgmental adjustments are necessarily non-systematic and ad hoc in nature. Accordingly, here we again utilize an alternative, systematic approach – AHP – in order to remedy this deficiency. And while we have not illustrated this alternative by adapting a formal macroeconomic forecasting model, the conceptual framework, as noted above, is grounded in modern macroeconomics. Our alternative approach, moreover, could also be readily employed to enrich forecasting exercises based on formal models (e.g. generating add factors more systematically and consistently; adjusting the values of exogenous variables). As stated in the earlier papers in this respect the two forecasting approaches can be seen to converge quite compatibly.

3. The Setting: An Economic Contraction After Six Years of Expansion

While in popular accounts it is conventional to view the U.S. economy as being in a recession if real Gross Domestic Product (GDP) has declined for two consecutive quarters, the National Bureau of Economic Research, utilizing a panel of experts (i.e., the above noted Business Cycle Dating Committee), has, by general consensus, been given the responsibility for dating the actual turning points in the U.S. economic cycle. This organization arrives at its assessments by utilizing a number of indicators of economic activity. It describes a recession as "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in production, employment, real income, and other indicators," National Bureau of Economic Research, Business Cycle Dating Committee (2008). In its announcement, it notes that the committee views the payroll employment measure, which is based on a large survey of employers, as "the most reliable comprehensive estimate of employment" and observes that this series reached its peak in December 2007 and has declined every month since. It views the quarterly estimates of

real Gross Domestic Product and real Gross Domestic Income as normally “the two most reliable comprehensive estimates of aggregate domestic production.” However, while the two measures are conceptually identical, measurement issues have produced a statistical discrepancy that has caused them to behave differently in recent quarters, with ambiguous implications for the dating of the peak of the most recent economic cycle. However, “Other series considered by the committee – including real personal income less transfer payments, real manufacturing and wholesale and retail sales, industrial production, and employment estimates based on the household survey – all reached peaks between November 2007 and June 2008.” This led the committee to conclude that “All evidence other than the ambiguous movements of the quarterly product-side measure of domestic production” confirmed that the contraction had begun at the end of 2007. Moreover, the NBER dates the trough of the previous cycle as having occurred in November of 2001, with the subsequent expansion hitting its peak, as we have now been informed, in December of 2007. This 73-month expansion was considerably shorter than the previous 120-month expansion that occurred between March 1991 and March 2001, the longest expansion in the post-world war II era, and was also shorter than two other post-war expansions (February 1961-December 1969; November 1982-July 1990).

The most recent contraction has also been accompanied during 2008 by increasing turbulence in U.S. and global financial and equity markets (with its onset dating from the middle of 2007), reflecting, in turn, the fallout from the collapse of the housing market, the sub-prime mortgage market and related financial instruments such as mortgage-backed securities and credit default swaps. Additionally world oil prices rose very rapidly throughout much of 2008. For example, while the widely-quoted UK Brent Blend spot price of oil had been trending upward since the middle of 2004, it jumped to over \$90 a barrel at the end of December 2007 and topped \$140 a barrel in early July 2008. Since then, oil prices have fallen precipitously – to below 40 in December 2008 – as the slowing of the global economy and the attendant diminished demand for oil have exerted their influence. For much of the year, the U.S. dollar was also under attack vis-à-vis the Euro and other major currencies, in a pattern that seemed, to some observers, to reflect a run-up in oil futures prices and the possibility that such futures were being used as a currency hedging vehicle, in addition to tracking underlying supply and demand factors in the oil market.

The recent economic news has been dominated by the U.S. Treasury’s attempt to prop up the financial markets with an almost \$350 billion infusion of support that was authorized by Congress as part of a total financial “bailout” package of \$700 billion (the remainder of which is being reserved for the use of the incoming Obama administration). Various measures implemented by the Federal Reserve System resulted in the pumping of billions of dollars of reserves into the banking system and a steep reduction in the federal funds rate. Two prominent investment banks were permitted to be acquired by stronger financial firms (while the bankruptcy of still another prominent investment bank was allowed to take place without a rescue effort), and two other prominent investment banks were converted into bank holding companies that then came under Federal Reserve jurisdiction. Additionally, plans were being laid by the incoming administration for a major fiscal stimulus package to be implemented soon after taking office (with estimates being circulated on the order of \$500 billion to \$1 trillion). Finally, in December 2008, Congress failed to adopt a proposed package of loans to the three U.S. automobile companies, two of whom were confronting near-term serious cash flow problems. On December 19 the administration announced that \$13.4 billion from the still unused “first tranche” of the financial bailout package would be deployed by the administration as a “bridge loan” to the two cash-strapped producers, so that fundamental issues surrounding the domestic industry could be addressed more directly by the incoming administration.

4. Application of AHP to the Macroeconomic Forecasting Problem

Our forecasting exercise employed the AHP to address the timing of the expected resurgence by seeking to answer the question “what is the most likely period in the future when the resurgence will occur?” By this term, we implicitly meant a recovery from the trough that will eventually be confirmed by the NBER, using the kinds of broad measures of the economy noted above. Like typical forecasters, we were not precise with regard to the projected rate of the expansion.

4.1 Decomposition of the Problem Hierarchically

Decomposing the problem hierarchically, the top level of the exercise consists of the primary factors believed by us to represent the forces or major influences driving the economy in the fall of 2008: “Aggregate Demand;” “Aggregate Supply;” and “the Current Global Financial Context.” Each of these primary categories was then decomposed into sub-factors represented in the second level. Under Aggregate Demand, we identified consumer spending, net exports (i.e., exports less imports), business capital investment, shifts in consumer and business investment confidence, fiscal policy, monetary policy, and expectations with regard to the future course of inflation (which, in turn, could reflect expectations concerning the future course of monetary policy and fiscal policy). As in the previous exercise, we make a distinction between shifts in consumer and business investment confidence and the formation of expectations regarding future economic developments.

Under Aggregate Supply, we identified labor costs (which, in turn, are driven by changes in such underlying factors as labor productivity and real wages), natural resource costs (e.g., the price of oil and other energy costs), and expectations regarding such costs in the future.

With regard to the Current Global Financial Context, we identified as the principal subfactors the likelihood of changes in major international political relationships (such as wars or other international conflicts), the high degree of global financial integration, a number of issues surrounding the current mortgage markets crisis, expectations with regard to future oil prices, and the future value of the dollar. We decomposed the current mortgage markets crisis into five sub-factors: uncertainty about housing prices, uncertainty about the value of mortgage-backed securities, the role of credit default swaps, the role of government intervention in the financial markets, and the lack of confidence in the accuracy of financial reporting. With regard to the various sub-factors, we recognized that they are, in some instances, interdependent. This is especially evident with regard to the sub-factors listed under the mortgage markets crisis.

The lowest level of the hierarchy consists of the alternate time periods in which the resurgence might occur as of December 5, 2008 (preliminary exercises had been conducted during October and November, 2008): within six months, within twelve months, within twenty-four months, or within thirty-six months (or beyond). Because the primary factors and associated sub-factors are time-dependent, their relative importance had to be established in terms of each of the four alternative time periods. Thus, instead of establishing a single goal as one does for a conventional hierarchy, we used the bottom level time periods to compare the Primary factors at the top. This entailed the creation of a feedback hierarchy known as a “holarchy” in which the priorities of the elements at the top level are determined in terms of the elements at the bottom level, thus creating an interactive loop. Figure 1 provides a schematic representation of the hierarchy we used to forecast the timing of the economic resurgence. There are five clusters, Primary Factors, Aggregate Demand Factors, Aggregate Supply Factors, Global Financial Context and Alternative Time Periods.

Figure 1. Overall View of the Structure of the Forecasting Model

4.2 Pairwise Comparison

After decomposing the problem hierarchically, the next step in the process was to pairwise-compare the relative importance of the primary factors (Aggregate Demand, Aggregate Supply, and the Global Financial Context) as they influence (1) the timing of the economic resurgence; (2) the relative importance of each of the sub-factors as drivers of the associated primary factor in the next level of the hierarchy; and (3) the relative importance of each of the subfactors under each primary factor as it influences the timing of the economic resurgence. These comparisons were carried out using the nine point fundamental scale of the AHP.

The judgments with regard to identification of factors and sub-factors, as well as the comparisons of their relative impact and strength, were conducted by the authors, who assumed the role of representative "experts". Obviously, the outcomes are strongly dependent on the quality of those judgments. As noted, the final version of the exercise was conducted on December 5, 2008.

Twenty-nine sets of judgment matrices were generated in this exercise. The priorities that emerged from the exercise for the major factors, sub-factors and their relative importance with regard to the time frames for a possible turnaround, are shown in the tables in the Appendix. At the beginning of the Appendix a brief explanation is given about how the questions were posed to elicit the judgments for each set of pairwise comparisons. A perusal of the tables reveals the following about the priorities derived from the pairwise comparison judgments:

With regard to attaining an economic resurgence within the six- and twelve-month forecasting periods, Aggregate Demand factors were judged to dominate the Aggregate Supply and Global Financial Context factors (79% in each period); for the longer 24- and 36-month time horizons, Aggregate Demand and Aggregate Supply factors were judged to be of equal weight (45% in each period), with likely adjustments in the Global Financial Context assuming somewhat greater relative importance over these longer periods.

With regard to promoting economic resurgence, the consumption, monetary policy, fiscal policy, and confidence sub-factors were assigned relative weights totaling 89% of the Aggregate Demand primary factor.

Of the Aggregate Demand sub-factors, consumption, net exports, investment, and confidence were judged to be most influential in the 24- and 36-month forecasting horizons, whereas monetary and fiscal (especially government expenditure) policy exerted greater influence in a 12- or 24-month time frame.

Of the Aggregate Supply sub-factors, natural resource costs were dominant at almost 60%, and this sub-factor assumed greater relative importance within the 24- and 36-month time horizons.

Of the Global Financial Context sub-factors, the mortgage crisis issues and the existence of global financial integration were dominant, totaling 69% of relative importance, with mortgage crisis issues alone accounting for 42%. The underlying mortgage issues sub-factors themselves were judged to be generally more amenable to solution within a 24-month or 36-month time horizon.

Each judgment matrix has an associated priority vector or vector of weights. (These are the numbers that appear in the supermatrix, **Table 3-a,b,c**, in the Appendix.) The limit supermatrix (**Table 4-a,b,c** in the Appendix) is the result of raising the supermatrix to large powers to approximate to the limit to which it converges. In this case, the powers of the supermatrix perform a cycle, and for the overall limit, the sum of the various limiting cycle phases is taken to obtain the outcome. This is the final supermatrix of the results. The resulting final priorities for the alternative time periods are obtained from the last four rows of any column in **Table 4-a,b,c** by normalizing the four numbers: 0.0307, 0.0634, 0.0953, and 0.1281. The resulting final priorities for the time periods are shown in **Table 1** below: six months 0.0968; twelve months 0.1997; twenty-four months 0.3001; and 36 months 0.4034.

5. Producing the Forecast of the Recovery

To obtain our forecast, we subsequently multiplied each priority by the midpoint of its corresponding time interval and added the results (as one does when evaluating expected values) as shown in Table 1.

Table 1. Expected value computation of number of months to turnaround

Time Period Alternative (and period covered)	Priorities (Normals)	Midpoint of time period measured in months; the starting time when the prediction was made is 0 (months)	Priority × Midpoint
1 Six months (0 to 6)	0.0968	3	0.2905
2 Twelve months (6 to 12)	0.1997	9	1.7970
3 Twenty four months (12 to 24)	0.3001	18	5.4014
4 Thirty six months (24 to 36)	0.4034	30	12.1009
Sum			19.5898

We interpreted this to mean that the recovery would occur about 20 months from the time of the final forecasting exercise on December 5, 2008, or around early August 2010; that is to say, toward the middle of the third quarter of 2010. Interestingly, as this paper was drafted in December 2008, a number of private and official forecasters were making projections that were more optimistic, believing that the trough of the cycle would be reached about a year earlier, Federal Reserve Bank of Philadelphia (2008) and Organization for Economic Cooperation and Development (2008).

6. Conclusion

This paper has once again demonstrated how the Analytic Hierarchy Process can serve as an additional tool for providing macroeconomic forecasts. We have based our forecast of the time period of the trough of the current economic cycle within the context of the macroeconomic conditions confronting the U.S. economy during late 2008, which had begun to experience a recession from its peak in December 2007, after an expansion of 73 months. We have concluded that the recovery would begin during the third quarter of 2010, from a trough that would be reached some 20 months forward from the date of the December 2008 forecasting exercise (and some 32 months from the previous cyclical peak, which is considerably longer than all other post-World War II contractions). Other private and official forecasters are also forecasting a longer contraction than has been the case in previous postwar cycles, but our forecast is even less optimistic, and reflects our view that fundamental dislocations have occurred that will take additional time to overcome.

Postscript

On September 20, 2010, The Business Cycle Dating Committee of the National Bureau of Economic Research announced (2010) that it had “determined that a trough in business activity occurred in the U.S. economy in June 2009. The trough marks the end of the recession that began in December 2007 and the beginning of the expansion. The recession lasted 18 months, which makes it the longest of any recession since World War II.” Thus, this widely-acknowledged arbiter of the dates for the turns in the business cycle dated the beginning of the current recovery some five quarters earlier than our own (third quarter of 2010) forecast. While acknowledging that the trough in “labor market indicators” (aggregate hours and employment) occurred “later” (e.g., “the NBER trough date is 6 months before the trough in payroll employment”), it based its conclusion on “the strong growth of quarterly real GDP and real GDI in the fourth quarter” of 2009, along with the committee’s belief “that these quarterly measures of the real volume of output across the entire economy are the most reliable measures of economic activity.”

Further, “in previous business cycles, aggregate hours and employment have frequently reached their troughs later than the NBER’s trough date.” Thus the trough in labor market indicators occurred at a point in time that was closer to our own forecast of the turn in the overall cycle. In any event, using either date, the strength of the recovery has been painfully slow along a variety of measures (Center on Budget and Policy Priorities (March 2015)), suggesting that structural elements are still at work that have contributed to a continued slackness in the overall labor market (despite a growth in employment and a reduction in the formal unemployment rate) and a failure of real wages to grow significantly during the current expansion.

References

- [1] Blair, A.R., Nachtmann, R. and Saaty, T. L. (2001). "Incorporating Expert Judgment in Economic Forecasts: The Case of the U.S. Economy in 1992," Chapter 12 in the book: Saaty, T.L. and L.G. Vargas, *Models, Methods, Concepts and Applications of the Analytic Hierarchy Process*, London: Kluwer Academic Publishers.
- [2] Blair, A.R., Nachtmann, R., Saaty, T.L. and Whitaker, R. (2002). "Forecasting the Resurgence of the US Economy in 2001: An Expert Judgment Approach," *Socio-Economic Planning Sciences*, 36(2): 77-91; and also Chapter 2 in Saaty, T.L. and L.G. Vargas, *Decision Making with the Analytic Network Process: Economic, Political, Social and Technological Applications with Benefits, Opportunities, Costs and Risks*, Springer, New York.
- [3] Blair, A.R., Mandelker, G., Saaty, T.L. and Whitaker, R. (2010). "Forecasting the Resurgence of the U.S. Economy in 2010: An Expert Judgment Approach," *Socio-Economic Planning Sciences*, 44(3): 114-121.
- [4] Blanchard, O. (2006). *Macroeconomics* (fourth edition), Prentice Hall, Englewood Cliffs, NJ.
- [5] Center on Budget and Policy Priorities (2015). "Chart Book: The Legacy of the Great Recession," updated March 9, 2015. [Online] Available at <http://www.cbpp.org> .
- [6] Fair, R.C. (1984). *Specification, Estimation, and Analysis of Macroeconometric Models*, Harvard University Press, Cambridge, MA.
- [7] Federal Reserve Bank of Philadelphia (2008). "Fourth Quarter 2008 Survey of Professional Forecasts," (November 17, 2008), [Online] Available at www.philadelphiafed.org .
- [8] Hilsenrath, Jon E. (2003). "Despite Job Losses, the Recession is Finally Declared Officially Over," *The Wall Street Journal* (July 18, 2003).
- [9] National Bureau of Economic Research, Business Cycle Dating Committee (Dec. 1, 2008). "Determination of the December 2007 Peak in Economic Activity," (Dec. 1, 2008), [Online] Available at NBER web site <http://www.nber.org> .
- [10] National Bureau of Economic Research Business Cycle Dating Committee (September 20, 2010). Announcement of the June 2009 trough of the current business cycle. [Online] Available at NBER web site <http://www.nber.org> .
- [11] National Bureau of Economic Research (2012). "Business Cycle Expansions and Contractions," [Online] Available at http://www.nber.org/cycles/US_Business_Cycle_Expansions_and_Contractions_20120423.pdf .
- [12] Organization for Economic Cooperation and Development (2008). "Economic Outlook No. 84," (November 2008) [Online] Available at OECD web site www.oecd.org .
- [13] Saaty, T. L. (2005). *Theory and Applications of the Analytic Network Process: Decision Making with Benefits, Opportunities, Costs and Risks*, RWS Publications, Pittsburgh, PA.
- [14] Saaty, T. L. (2006). *Fundamentals of Decision Making and Priority Theory with the Analytic Hierarchy Process*, RWS Publications, Pittsburgh, PA.

Appendix:

The Supermatrix and Its Limit and the Judgment Matrices

Twenty-nine pairwise comparison judgments were performed and the priorities derived from them were used to form the supermatrix shown in three parts in appendix Tables 3-a to 3-c. The stochastic supermatrix is raised to powers until it converges; that is, its values remain the same from one power to the next resulting in the limit supermatrix shown in appendix Tables 4-a to 4-c.

Posing the question when comparing criteria

In this paper we use the terms criteria and factors interchangeably. The caption for **appendix Table 5, for example**, reads “The Judgments for the Subfactors of Aggregate Demand with respect to the Aggregate Demand main factor”. The Aggregate Demand main factor is the parent element with respect to which its six subfactors in the Aggregate Demand cluster in Figure 1 are compared. They are Consumption, Net Exports, Investment, Confidence, Fiscal Policy, Monetary Policy and Expected Inflation. The Fundamental Scale of the AHP is used to express the pairwise comparison judgments: [1-Equal, 3-Moderate, 5-Strong, 7-Very Strong, 9-Extreme; numbers in-between and decimals are also allowed]. The question posed is: *“Which subfactor is more important in determining the time to recovery with respect to the Aggregate Demand main factor and how much more important?”* The pair involved in a comparison is indicated by the (row, column) headings for the cell into which the judgment is placed. The judgment indicates how much more important the row element is than the column element in the opinion of the judge. For example, the value of 7 in the (Consumption, Exports) cell in **appendix Table 5** means Consumption is considered to be very strongly more important than Exports in determining the time to recovery. If instead the judgment was that Exports were very strongly more important than Consumption, the inverse value of 1/7 would be entered.

Entering the derived priorities in the supermatrix

The priorities in **appendix Table 5**, determined by computing the principal eigenvector of the matrix of judgments, are: 0.355, 0.025, 0.053, 0.104, 0.208, 0.227, 0.029. The priorities may be interpreted as meaning that Consumption at .355 and Monetary Policy at .227 are the most important Aggregate Demand Factors. Put another way, Consumption is 35.5% of what drives an economic recovery among aggregate demand factors while Net Exports is the least important at 2.5%. These priorities are entered into the supermatrix in **appendix Table 3-a** under the Aggregate Demand column heading.

Posing the question when comparing time periods with respect to criteria

The time periods are compared according to which is the more likely period for recovery due to the influence of the factor with respect to which the comparisons are made. In Figure 1 the Fiscal Policy criterion in the Aggregate Demand Factors cluster has the subfactors (or subcriteria): Tax Policy and Government Expenditure, so the time periods are pairwise compared with respect to each of these two subfactors rather than directly with respect to the factor Fiscal Policy. The time periods are compared directly with respect to the factors in the cluster that have no subfactors such as Consumption. The question posed, **for example**, would be: *Is the Six Months time period or the Twelve Months time period more likely to be the turnaround time because of Consumption and how strongly more?* Here Six Months is not more likely than Twelve Months; it is the other way around so a 1/3 is entered in appendix Table 8 in the (Six Months, Twelve Months) cell.

Posing the question when comparing the primary factors related to time periods

The final type of comparison arises because of the links back from the time periods to the primary factors. In this case the question posed, **for example**, is: *For the turnaround to occur in the Six Months time period which would have greater influence, and how strongly greater, the primary factor Aggregate Demand or Aggregate Supply?* The judgment is that Aggregate Demand would be very strongly dominant over Aggregate Supply for the turnaround to occur in six months, so a 7 is entered in the (Aggregate Demand, Aggregate Supply) cell in Table 9.

Computing the limit supermatrix

Overall priorities for the alternative time periods are obtained by raising the supermatrix to powers until it converges to the limit supermatrix shown in Tables 4-a to 4-c. In the limit supermatrix all the columns are the same. The raw values for the alternative time periods are the same in every column of the limit supermatrix. These four values are shown in column 2 of appendix Table 2 below. They are normalized by dividing each by their sum to obtain the priorities for the time periods shown in the third column. These priorities may be interpreted as the likelihood of a turnaround occurring during these time periods.

Table 2. Likelihood of a turnaround during a time period

Time period	Raw values (from the Limit Supermatrix)	Likelihood of a turnaround during time period (Normalize raw values to 1)
Six Months	0.031	0.097
Twelve Months	0.063	0.200
Twenty Four Months	0.095	0.300
Thirty Six Months	0.128	0.404

Computing the expected number of months until the turnaround

To compute the expected time to the turnaround, as is traditionally done in economics, multiply the mid-point of each time period by the likelihood of the turnaround occurring during that time period. For example, the Six Months time period runs from 0 to 6 months so its midpoint is 3 months. The Twelve Months time period runs from 6 to 12 months so its midpoint falls at 9 months; the Twenty Four Months time period runs from 12 to 24 months, so its midpoint falls at 18 months, and the Thirty Six Months time period runs from 24 to 36, so its midpoint is at 30. Using an expected value calculation, in months, from Dec.2008: Expected turnaround = $3 \times 0.0967 + 9 \times 0.1997 + 18 \times 0.3001 + 30 \times 0.4035 = 19.5898$

The exercise was completed in early December 2008, so 19.59 means the turnaround is expected to occur in about nineteen and a half months, or around mid July in 2010. We are grateful to Elsevier Ltd for giving us permission to publish this version of our original paper.

Table 3-a. Supermatrix that contains the weights derived from the pairwise comparison matrices

		<div> <div>0Primary Factors</div> <div>1Aggregate Demand Factors</div> <div>2Aggregate Supply Factors</div> </div>												
		1Aggreg. Demand	2Aggreg. Supply	3Global Finan'l	1Con- sump.	2Net Exports	3Invest- ment	4Conf- idence	5Fiscal Policy	6Monetary Policy	7Expected Inflation	1Labor Costs	2Natural Resource \$	3Expec- tations
0 Primary Factors	1 Aggregate Demand	0	0	0	0	0	0	0	0	0	0	0	0	0
	2 Aggregate Supply	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 Global Fnc'l Con.	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Aggregate Demand Factors	1 Consumption	0.355	0	0	0	0	0	0	0	0	0	0	0	0
	2 Net Exports	0.025	0	0	0	0	0	0	0	0	0	0	0	0
	3 Investment	0.053	0	0	0	0	0	0	0	0	0	0	0	0
	4 Confidence	0.104	0	0	0	0	0	0	0	0	0	0	0	0
	5 Fiscal Policy	0.208	0	0	0	0	0	0	0	0	0	0	0	0
	6 Monetary Policy	0.227	0	0	0	0	0	0	0	0	0	0	0	0
	7 Expected Inflation	0.029	0	0	0	0	0	0	0	0	0	0	0	0
2 Aggregate Supply Factors	1 Labor Costs	0.157	0.157	0	0	0	0	0	0	0	0	0	0	0
	2 Natural Res. Costs	0.594	0.594	0	0	0	0	0	0	0	0	0	0	0
	3 Expectations	0.249	0.249	0	0	0	0	0	0	0	0	0	0	0
3 Global Financial Context	1 Major Int'l Polit.Rel.	0	0	0.033	0	0	0	0	0	0	0	0	0	0
	2 Global Fnc'l Integ.	0	0	0.271	0	0	0	0	0	0	0	0	0	0
	3 Mortgage Crisis	0	0	0.423	0	0	0	0	0	0	0	0	0	0
	4 Expect. Oil Prices	0	0	0.167	0	0	0	0	0	0	0	0	0	0
	5 Future Value of \$	0	0	0.107	0	0	0	0	0	0	0	0	0	0
11 Fiscal Pol. Issues	1 Tax Policy	0	0	0	0	0	0	0	0.167	0	0	0	0	0
	2 Gov't Expenditure	0	0	0	0	0	0	0	0.833	0	0	0	0	0
31 Mortgage Crisis Issues	1 Housing Prices	0	0	0	0	0	0	0	0	0	0	0	0	0
	2 Mortgage-bkd Sec.	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 Credit Def. Swaps	0	0	0	0	0	0	0	0	0	0	0	0	0
	4 Gov't Owner. Inter.	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 Financ'l Reporting	0	0	0	0	0	0	0	0	0	0	0	0	0
4 Alternatives	1Six months	0	0	0	0.051	0.083	0.078	0.09	0	0.19	0.09	0.25	0.078	0.057
	2Twelve months	0	0	0	0.083	0.083	0.078	0.149	0	0.445	0.149	0.25	0.134	0.109
	3Twenty four months	0	0	0	0.307	0.417	0.305	0.223	0	0.258	0.223	0.25	0.323	0.377
	4Thirty six months	0	0	0	0.559	0.417	0.538	0.538	0	0.108	0.538	0.25	0.464	0.457

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Table 3-b. Supermatrix (Cont'd)

		3Global Financial Contexts					11Fiscal Pol. Issues		31Mortgage Crisis Issues				
		1Int'l Pol.	2Global	3Mortgage	4Expect'ns	5Future	1Tax	2Gov't	1Uncertainty	2Uncertainty	3Cred. Def.	4Gov't	5Financ'l
		Rel's	Financ'l	Crisis	Oil Prices	Value \$	Policy	Expend.	Housing \$	Mort. Sec.	Swaps	Own.&Int.	Reporting
0 Primary Factors	1 Aggregate Demand	0	0	0	0	0	0	0	0	0	0	0	0
	2 Aggregate Supply	0	0	0	0	0	0	0	0	0	0	0	0
	3 Global Fnc'l Con.	0	0	0	0	0	0	0	0	0	0	0	0
1 Aggregate Demand Factors	1 Consumption	0	0	0	0	0	0	0	0	0	0	0	0
	2 Net Exports	0	0	0	0	0	0	0	0	0	0	0	0
	3 Investment	0	0	0	0	0	0	0	0	0	0	0	0
	4 Confidence	0	0	0	0	0	0	0	0	0	0	0	0
	5 Fiscal Policy	0	0	0	0	0	0	0	0	0	0	0	0
	6 Monetary Policy	0	0	0	0	0	0	0	0	0	0	0	0
	7 Expected Inflation	0	0	0	0	0	0	0	0	0	0	0	0
2 Aggregate Supply Factors	1 Labor Costs	0	0	0	0	0	0	0	0	0	0	0	0
	2 Natural Resource \$	0	0	0	0	0	0	0	0	0	0	0	0
	3 Expectations	0	0	0	0	0	0	0	0	0	0	0	0
3 Global Financial Context	1 Major Int'l Polit.Rel.	0	0	0	0	0	0	0	0	0	0	0	0
	2 Global Fnc'l Integ.	0	0	0	0	0	0	0	0	0	0	0	0
	3 Mortgage Crisis	0	0	0	0	0	0	0	0	0	0	0	0
	4 Expect. Oil Prices	0	0	0	0	0	0	0	0	0	0	0	0
	5 Future Value of \$	0	0	0	0	0	0	0	0	0	0	0	0
11 Fiscal Pol. Issues	1 Tax Policy	0	0	0	0	0	0	0	0	0	0	0	0
	2 Gov't Expenditure	0	0	0	0	0	0	0	0	0	0	0	0
31 Mortgage Crisis Issues	1 Housing Prices	0	0	0.3804	0	0	0	0	0	0	0	0	0
	2 Mortgage-bkd Sec.	0	0	0.2482	0	0	0	0	0	0	0	0	0
	3 Credit Def. Swaps	0	0	0.2506	0	0	0	0	0	0	0	0	0
	4 Gov't Owner. Inter.	0	0	0.0444	0	0	0	0	0	0	0	0	0
	5 Financ'l Reporting	0	0	0.0764	0	0	0	0	0	0	0	0	0
4 Alternatives	1Six months	0.0553	0.0553	0	0.0720	0.0720	0.0666	0.1045	0.0591	0.0734	0.0734	0.0734	0.0734
	2Twelve months	0.1175	0.1175	0	0.1429	0.1429	0.1416	0.4717	0.1760	0.1728	0.1728	0.1728	0.1728
	3Twenty four months	0.2622	0.2622	0	0.3664	0.3664	0.2523	0.2741	0.2888	0.3769	0.3769	0.3769	0.3769
	4Thirty six months	0.5650	0.5650	0	0.4188	0.4188	0.5395	0.1498	0.4762	0.3769	0.3769	0.3769	0.3769

Table 3-c. Supermatrix (Cont'd)

		4Alternatives			
		1Six months	2Twelve months	3Twenty four months	4Thirty six months
0 Primary Factors	1 Aggregate Demand	0.7854	0.7854	0.4545	0.4545
	2 Aggregate Supply	0.1488	0.1488	0.4545	0.4545
	3 Global Fnc'l Con.	0.0658	0.0658	0.0909	0.0909
1 Aggregate Demand Factors	1 Consumption	0	0	0	0
	2 Net Exports	0	0	0	0
	3 Investment	0	0	0	0
	4 Confidence	0	0	0	0
	5 Fiscal Policy	0	0	0	0
	6 Monetary Policy	0	0	0	0
	7 Expected Inflation	0	0	0	0
2 Aggregate Supply Factors	1 Labor Costs	0	0	0	0
	2 Natural Resource \$	0	0	0	0
	3 Expectations	0	0	0	0
3 Global Financial Context	1 Major Int'l Polit.Rel.	0	0	0	0
	2 Global Fnc'l Integ.	0	0	0	0
	3 Mortgage Crisis	0	0	0	0
	4 Expect. Oil Prices	0	0	0	0
	5 Future Value of \$	0	0	0	0
11 Fiscal Pol. Issues	1 Tax Policy	0	0	0	0
	2 Gov't Expenditure	0	0	0	0
31 Mortgage Crisis Issues	1 Housing Prices	0	0	0	0
	2 Mortgage-bkd Sec.	0	0	0	0
	3 Credit Def. Swaps	0	0	0	0
	4 Gov't Owner. Inter.	0	0	0	0
	5 Financ'l Reporting	0	0	0	0
4 Alternatives	1Six months	0	0	0	0
	2Twelve months	0	0	0	0
	3Twenty four months	0	0	0	0
	4Thirty six months	0	0	0	0

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Table 4-a. Limit Supermatrix (for this model all the columns have the same values)

		0Primary Factors		1Aggregate Demand Factors							2Aggregate Supply Factors			
		1Aggreg. Demand	2Aggreg. Supply	3Global Finan'l	1Con- sump.	2Net Exports	3Invest- ment	4Conf- idence	5Fiscal Policy	6Mone- tary Pol.	7Expected Inflation	1Labor Costs	2Natural Resource \$	3Expect- ations
0 Primary Factors	1 Aggregate Demand	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755
	2 Aggregate Supply	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155
	3 Global Fnc'l Con.	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265
1 Aggregate Demand Factors	1 Consumption	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623
	2 Net Exports	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044
	3 Investment	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092
	4 Confidence	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183
	5 Fiscal Policy	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364
	6 Monetary Policy	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398
	7 Expected Inflation	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051
2 Aggregate Supply Factors	1 Labor Costs	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181
	2 Natural Resource \$	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686
	3 Expectations	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288
3 Global Financial Context	1 Major Int'l Polit.Rel.	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
	2 Global Fnc'l Integ.	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072
	3 Mortgage Crisis	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112
	4 Expect. Oil Prices	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044
	5 Future Value of \$	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
11 Fiscal Pol. Issues	1 Tax Policy	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061
	2 Gov't Expenditure	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303
31 Mortgage Crisis Issues	1 Housing Prices	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043
	2 Mortgage-bkd Sec.	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
	3 Credit Def. Swaps	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
	4 Gov't Owner. Inter.	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	5 Financ'l Reporting	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
4 Alternatives	1Six months	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307
	2Twelve months	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634
	3Twenty four months	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953
	4Thirty six months	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281

Table 4-b. Limit Supermatrix (Cont'd)

		3Global Financial Contexts					11Fiscal Policy Issues		31Mortgage Crisis Issues				
		1 Int'l Pol. Rel'ns	2Global Fnc'l Int.	3Mortgage Crisis	4Expect'ns Oil Prices	5Future Value \$	1Tax Policy	2Gov't Expend.	1Uncertainty Housing \$	2Mort. Bkd Securities	3Role Credit Default Swps	4Gov't Own.&Int.	5Financ'l Reporting
0 Primary	1 Aggregate Demand	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755	0.1755
Factors	2 Aggregate Supply	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155	0.1155
	3 Global Fnc'l Con.	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265
1 Aggregate	1 Consumption	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623	0.0623
Demand	2 Net Exports	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044
	3 Investment	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092	0.0092
Factors	4 Confidence	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183	0.0183
	5 Fiscal Policy	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364	0.0364
	6 Monetary Policy	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398
	7 Expected Inflation	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051
2 Aggregate	1 Labor Costs	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181
Supply	2 Natural Resource \$	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686	0.0686
	3 Expectations	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288
3 Global	1 Major Int'l Polit.Rel.	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
Financial	2 Global Fnc'l Integ.	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072
	3 Mortgage Crisis	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112
Context	4 Expect. Oil Prices	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044
	5 Future Value of \$	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
11 Fiscal Pol.	1 Tax Policy	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061
Issues	2 Gov't Expenditure	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303	0.0303
31 Mortgage	1 Housing Prices	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043
Crisis	2 Mortgage-bkd Sec.	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
	3 Credit Def. Swaps	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
Issues	4 Gov't Owner. Inter.	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	5 Financ'l Reporting	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
4 Alternatives	1Six months	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307	0.0307
	2Twelve months	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634	0.0634
	3Twenty four months	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953	0.0953
	4Thirty six months	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281	0.1281

Table 4-c. Limit Supermatrix (Cont'd)

		4Alternatives			
		1Six months	2Twelve months	3Twenty four months	4Thirty six months
0 Primary Factors	1 Aggregate Demand	0.1755	0.1755	0.1755	0.1755
	2 Aggregate Supply	0.1155	0.1155	0.1155	0.1155
	3 Global Fnc'l Con.	0.0265	0.0265	0.0265	0.0265
1 Aggregate Demand Factors	1 Consumption	0.0623	0.0623	0.0623	0.0623
	2 Net Exports	0.0044	0.0044	0.0044	0.0044
	3 Investment	0.0092	0.0092	0.0092	0.0092
	4 Confidence	0.0183	0.0183	0.0183	0.0183
	5 Fiscal Policy	0.0364	0.0364	0.0364	0.0364
	6 Monetary Policy	0.0398	0.0398	0.0398	0.0398
	7 Expected Inflation	0.0051	0.0051	0.0051	0.0051
2 Aggregate Supply Factors	1 Labor Costs	0.0181	0.0181	0.0181	0.0181
	2 Natural Resource \$	0.0686	0.0686	0.0686	0.0686
	3 Expectations	0.0288	0.0288	0.0288	0.0288
3 Global Financial Context	1 Major Int'l Polit.Rel.	0.0009	0.0009	0.0009	0.0009
	2 Global Fnc'l Integ.	0.0072	0.0072	0.0072	0.0072
	3 Mortgage Crisis	0.0112	0.0112	0.0112	0.0112
	4 Expect. Oil Prices	0.0044	0.0044	0.0044	0.0044
	5 Future Value of \$	0.0028	0.0028	0.0028	0.0028
11 Fiscal Pol. Issues	1 Tax Policy	0.0061	0.0061	0.0061	0.0061
	2 Gov't Expenditure	0.0303	0.0303	0.0303	0.0303
31 Mortgage Crisis Issues	1 Housing Prices	0.0043	0.0043	0.0043	0.0043
	2 Mortgage-bkd Sec.	0.0028	0.0028	0.0028	0.0028
	3 Credit Def. Swaps	0.0028	0.0028	0.0028	0.0028
	4 Gov't Owner. Inter.	0.0005	0.0005	0.0005	0.0005
	5 Financ'l Reporting	0.0009	0.0009	0.0009	0.0009
4 Alternatives	1Six months	0.0307	0.0307	0.0307	0.0307
	2Twelve months	0.0634	0.0634	0.0634	0.0634
	3Twenty four months	0.0953	0.0953	0.0953	0.0953
	4Thirty six months	0.1281	0.1281	0.1281	0.1281

Pairwise Comparisons of the Elements of the Model

A set of priorities or weights was obtained from **each of 29** pairwise comparison **matrices** as its principal eigenvector. These derived priorities **were** placed into the supermatrix in the appropriate column. **For example, appendix Table 5 below** gives the priorities or weights for the Aggregate Demand Main Factor, so they are placed in the supermatrix in **appendix Table 3-a** in the first column under “Primary Factors Aggregate Demand” beginning in the fourth row.

The judgments and resulting weights are also shown in appendix Tables 6 and 7 for the Aggregate Supply Main Factor and for the Global Financial Context Main Factor. Also shown in appendix Table 8 are the judgments and weights for the time alternatives relating to Consumption. Finally, appendix Table 9 shows the judgments and weights for the Primary Factors (i.e., Aggregate Demand, Aggregate Supply, and the Global Financial Context) with respect to the 6-month time period. The other judgments and weights for the other elements in the model can be found in tables appended to Blair, Mandelker, Saaty and Whitaker (2010).

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Table 5. The judgments for the subfactors of the aggregate demand main factor

	1Consumption	2Exports	3Investment	4Confidence	5Fiscal Policy	6Monetary Policy	7Expected Inflation	Weights
1Consumption	1	7	7	5	3	2	7	0.355
2Net Exports	1/7	1	1/5	1/7	1/8	1/7	1	0.025
3Investment	1/7	5	1	1/3	1/5	1/6	2	0.053
4Confidence	1/5	7	3	1	1/4	1/4	6	0.104
5Fiscal Policy	1/3	8	5	4	1	1	5	0.208
6Monetary Policy	1/2	7	6	4	1	1	7	0.227
7Expected Inflation	1/7	1	1/2	1/6	1/5	1/7	1	0.029

Table 6. The judgments for the subfactors of the aggregate supply main factor

	Labor Costs	Natural Resources	Expectations	Weights
Labor Costs	1	1/3	1/2	.157
Natural Resources	3	1	3	.594
Expectations	2	1/3	1	.249

Table 7. Judgments for the subfactors of the global financial context main factor

	Major International Political Relationships	Global Financial Integration	Mortgage Crisis Issues	Expectations of Future Oil Prices	Future Value of the Dollar	Weights
Major Int'l Political Relationships	1	1/7	1/7	1/6	1/6	.033
Global Financial Integration	7	1	1	2	2	.271
Mortgage Crisis Issues	7	1	1	5	5	.423
Expectations of Future Oil Prices	6	1/2	1/5	1	3	.167
Future Value of the Dollar	6	1/2	1/5	1/3	1	.107

Table 8. The judgments for the alternatives with respect to consumption

	6 Months	12 Months	24 Months	36 Months	Weights
6 Months	1	1/3	1/5	1/7	0.051
12Months	3	1	1/7	1/7	0.083
24 Months	5	7	1	1/3	0.307
36 Months	7	7	3	1	0.559

Table 9. Judgments for the primary factors with respect to 6 month time period

	Aggregate Demand	Aggregate Supply	Global Financial Context	Weights
Aggregate Demand	1	7	9	0.785
Aggregate Supply	1/7	1	3	0.149
Geopolitical	1/9	1/3	1	0.066