EQUITY Premium Puzzle in a Data-Rich Environment

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Abstract

Standard consumption-based asset pricing models focus on the consumption risk, seen as the only source of fluctuations and information about risk for the informed investor. These models, however, can account for high expected excess stock return only when assuming implausible relative risk aversion. This paper adds additional risk factors to the standard C-CAPM model to resolve both the equity premium and the risk-free rate puzzles as well as the risk-free rate volatility puzzle. By adding other relevant risk factors, the resulting pricing model is able to explain these puzzles relying on admissible range of local relative risk aversion. The model generates, also, a time-varying relative risk aversion and intertemporal elasticity of substitution.

Keywords: Common factors, factor analysis, principal components, asset pricing, equity premium puzzle, risk free rate puzzle.

JEL classification: G10, G12, C33

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1 Introduction

Models of reference-dependant preferences are widely used in financial economics. Utility functions in these models incorporate a reference point for the consumption, generating some time variation in investors' preferences.[1] The evolution of the reference point is, then, a central question in these models. Habit formation literature assumes that consumers become accustomed to a certain standard of living, and changing how much can be consumed relative to a reference level will affect their well-being.[2] However, the way in which habits are modeled differs upon authors. Sundaresan (1989) and Abel (1990) study the ability of habit persistence to resolve the equity premium puzzle, first introduced by the seminal work of Mehra and Prescott (1985). Constantinides (1990) demonstrates that in models with trivial production sectors, habit persistence in preferences may potentially account for both risk-free rate and equity premium puzzles.[3] Campbell and Cochrane (1999) refined this model to account for additional puzzles (e.g. excess return forecastability).[4] Watcher (2006) adapts the Campbell and Cochrane model to show that equity premia varies with the sluggish response in consumption habit. Garcia et al. (2006) focus on a class of consumption-based models where the reference level is modeled using different specifications, nesting C-CAPM, habit formation and/or recursive utility. In this literature, the reference level may be a subsistence level (Samuelson, 1989) or a habit formed through past consumption (Sundaresan, 1989; Constantinides, 1990; Campbell and Cochrane, 1999).[5] In their study, Campbell and Cochrane (1999) model consumption growth as an exogenous process and specify a dynamic model with persistence and conditional heteroskedasticity for the surplus consumption ratio. Although, habit specifications in these models have been successful in matching some key empirical facts and explaining the equity premium puzzle and risk-free rate puzzle, they do so at the cost of high risk aversion.

This paper focuses directly on the dynamics of the reference level linking them to the economic conditions. To the best of our knowledge, this is the first time that a study deals with the equity premium puzzle in data rich environment

[1] With the level of consumption unusually low and flat consumption growth, the volatility of the marginal utility rises causing high premia on risky assets leading the risk premium to a countercyclical behavior.

[2] There exists a rich literature on habit formation in the asset pricing models (e.g., Abel, 1990; Constantinides, 1990; Heaton, 1995; and Campbell and Cochrane, 1999, to cite only few seminal works). See also Mehra (2006) for a complete review on the equity premium literature.

[3] In the case of production economies, the precautionary behavior of habit forming agents makes the consumption path smooth against economic fluctuations resulting in a low premia. Other ingredients need to be added to the model to prevent the agents from smoothening their consumption, namely the adjustment cost of capital (as in for example, Jerman, 1998 and Douch, 2009), or limited reallocation of labor in a two sectors business cycle model(Boldrin et al., 2001). In this work we consider a pure exchange economy à la Lucas (1978) where we link the aggregate consumption to other macroeconomic variables through the specification of the consumption surplus ratio.

[4] There has been, recently, growing interest in the habit formation models. See for example, Dai (2000), Chen and Ludvigson (2003), Bekaert et al. (2004), Woehrmann et al. (2005) and Yogo (2008). Habit formation in these models makes aggregate consumption responses to economic shocks flat, and the response of the consumption variable in line with its observed behavior.

[5] In this work, we refer to habit formation in the context of a "difference habit" (Sundaresan, 1989; Constantinides, 1990; Campbell and Cochrane, 1999) as opposed to a "ratio habit" (Abel, 1990).

where the economic agent can make use of a large set of information (contained in a large data set, and in particular of the common factors) when deciding on his future consumption. In a standard consumption-based asset pricing models, the consumption level is the only sources of fluctuations and information about risk for the informed investor. This assumption is too restrictive since investors care not only about the consumption risk. Other sources of economic risk such as inflation, labour market conditions and shocks in money and financial markets might also matter.

The point of departure from previous works is that in our framework we do not restrict the reference level to be a function of lagged consumption level (as in Ferson and Constantinides 1990) or as an autoregressive process (Campbell and Cochrane 1999). Moreover, we do not restrict the consumption process to be a random walk. Instead, our model is more general since we represent the growth rate level of consumption and the level of the fundamental factors entering the reference level as generated by a vector autoregression representation, assuming a time-varying conditional covariance (as in Engle 2002). Using a large set of macroeconomic indicators, the framework allows us to identify fundamental factors and study the importance of the economic fluctuations and their impact on agent preferences. Our strategy is to let the reference level be function of contemporaneous level of aggregate consumption with slope depending on fundamental factors related to inflation, labour market and money and financial markets conditions. This strategy implies a highly volatile intertemporal marginal rate of substitution (IMRS) compared to what has been found in previous works, allowing us to resolve both the equity premium puzzle and the risk-free rate puzzle as well as the risk free rate volatility puzzle with a plausible local relative risk aversion.

The main results of the paper is that by adding additional risk factors to the standard C-CAPM model leads us to resolve the equity asset pricing puzzles.[6] Importantly, we do so with plausible parameter estimates. Our model also features both time varying local relative risk aversion and time varying intertemporal elasticity of substitution (EIS, hereafter). In addition the model produces countercyclical equity premium and local relative risk aversion and generates a time varying risk free rate which is consistent with what is found in the data. Moreover, our results show that the risk free rate puzzle can be accounted for by the presence of additional precautionary saving channels induced by the volatility of the fundamental factors. The mean intertemporal elasticity of substitution is in line with results using time-series data obtained by Mulligan (2002), where the estimate is close to unity. Our results show also that we are able to resolve the equity premium and free-rate puzzles using new sources of risk rather than only using the

[6]Campbell and Cochrane (1999) account for the high equity premium with local relative risk aversion of more than 35 and all the average levels of the local relative risk aversion are higher than the plausible uper bound of 10.

traditional consumption risk. Furthermore, the time-varying behaviors of the elasticity of intertemporal substitution and the coefficient of relative risk aversion (CRRA) are not coincident overtime.

There exist a strong direct relationship between macroeconomic aggregates and equity premium, making the later closely related to economic conditions (Ferson and Merrick, 1987 and Fama and French, 1989). Macroeconomic fundamentals are, then, crucial determinants of risk premia. Common factors governing the state of the economy influence both stock prices and preferences. In the obtained valuation equation, using common factors, the excess returns on equity includes both consumption risk as well as the risks associated with variations in preferences.

We consider the methodology of dynamic factor analysis for large datasets to capture the covariation among economic time series (the economy's dynamics) to examine the equity premium. Factor models methodology, consisting of using small number of reference variables to model variations in a large number of economic variables, has attracted growing scholarly attention in recent years. This framework has been used in many economic analyses such as the study of excess bond returns modeled as a function of a small number of factors (Ludvigson and Ng, 2009). Stock and Watson (1989) used one reference variable to model the comovements of the main macroeconomic aggregates. Moreover, the forecast error of a large number of macroeconomic variables can be reduced by including few factors, in structural as well as nonstructural forecasting models (Stock and Watson, 1999).

The key question is whether fluctuations in the financial market have any link with the macroeconomic conditions, and if few estimated factors can effectively summarize all the information set driven from large number of economic time series. As shown by Ludvigson and Ng (2009), the underlying data series are largely driven by few factors, which eliminate the arbitrary use of perfect proxies to macroeconomic fundamentals. This methodology allows us to use large number of time series to infer the unobservable information sets of financial market participants.[7] Dynamic factor analysis methodology is implemented by estimating common factors from a monthly panel of 555 time series using the method of principal components. First, we divide our panel into three categories for the period 1960:01 to 2007:12. Monetary and financial market related series are grouped into one category for a total of 87 variables plus the 100 French portfolios. The second category concerns labor market series with 224 variables. Prices form the last categories for a total of 144 series. Common factors are then estimated for each category by principal component analysis.[8]

[7] See Ludvigson and Ng (2009) for a review of related literature on the use of dynamic factor analysis in asset pricing models.

[8] Dynamic factor analysis is becoming more popular in the literature. Early applications are reviewed by Sargent and Sims (1977) and Geweke (1977). Recent examples include Stock and Watson (2002 and 2005), Bai and Ng (2008), Mönch (2007), Boivin and Giannomi (2005), Duffee

In our empirical work, we formulate and empirically investigate a consumption-based asset pricing model in which aggregate risk aversion is time-varying in response to news about aggregate consumption growth in an habit formation model, as long as, news about inflation, labor market conditions and money and financial markets.[9] The model resembles closely that of Campbell and Cochrane's (1999) model. However, rather than specifying an exogenous AR(1) process for the surplus consumption ratio, we specify this ratio as a function of macro fundamentals. Bad news about economic conditions raise risk aversion. More importantly, bad news about inflation (an unexpected increase in inflation), labor market, money and financial markets raise aggregate risk aversion and good news about them temporarily lower aggregate risk aversion.

The outline of the paper is as follows. In the next section we provide the details of the model. Section 3 discuss the estimation methodology used to estimate the model. Section 4 gives the empirical results. Finally, the last section summarizes results and concludes.

2 The model

2.1 The Economy

In this section we develop a model that adds other risk-factors to the consumption risk in a pure exchange economy as described by Lucas (1978) and Mehra and Prescott (1985). These risk-factors capture additional sources of risk that affect the financial market participants but are not taken into account by the aggregate consumption.

In what follows, we suppose that the economy is populated by a continuum of infinitely lived identical agents. All households are identical, and they maximize the expected present value of life-time utility. At an arbitrary date t, the representative agent's problem is written as,

$$\underset{\{C_j\}}{[Max]} \; E_t \sum_{j=t}^{\infty} \beta^{j-t} u(C_t, X_t), \tag{1}$$

$$s.t. \quad W_{t+1} = R_{t+1}(W_t - C_t), \tag{2}$$

where E_t is the expectation operator at time t, $0 < \beta < 1$ is the subjective discount factor, W_t is the aggregate total wealth in period t, C_t is the consumption level, X_t is the consumption reference level and R_t is the gross return on

(2008) and Ludvigson and Ng (2009) to cite few works. Examples abound all over economics ranging from the study of the macroeconomic effects of various policy to the study of the aggregate implications of microeconomics behavior (e.g. Forni and Lippi, 1997).

[9] In our model, the representative agent's risk aversion varies with respect to economic conditions. This variation in risk aversion raises the correlation between marginal utility and asset returns, while the correlation between consumption and returns remains low (smoothing).

the total wealth portfolio. The structure of the consumption reference level, X_t that we use is mostly reffered to in the literature as habit formation (Sundaresan, 1989; Constantinides, 1990; Campbell and Cochrane, 1999), prefrence shocks (Christiano et al., 2008), taste shocks (Caballero, 1990 and Normandin and St-Amour, 1998) or preferences for status -wealth in utility- (Heffetz and Frank, 2008, Becker, Murphy and Werning, 2005, Hopkins and Kornienko, 2004). In this paper, we remain agnostic about the source of the consumption reference level, focusing instead on its potential effects on the equity premia.

The second equation is the intertemporal budget constraint that the representative agent faces. This constraint shows that the next-period total wealth is equal to the portfolio gross return (R_{t+1}) times the part of contemporary wealth net use for consumption.

The first order conditions imply the usual Euler equation, i.e., $E_t\left[R_{t+1}M_{t+1}\right]=1$, where, $M_{t+1}=\beta\frac{u^{'}(C_{t+1},X_{t+1})}{u^{'}(C_t,X_t)}$ is the marginal rate of intertemporal substitution or in other words, the stochastic discount factor. In complete markets with the principle of no-arbitrage (when consumers are not satiated), any portfolio with a nonnegative payoff must have a positive price. This stochastic discount factor is unique, because investors can trade with one another to eliminate any non-systematic variation in their marginal utilities i.e. risk pooling (Cochrane and Hansen, 1992).

2.2 Economic Agent's preferences

Let the preferences being displayed by a power utility function in the following form,

$$U(C_t,X_t)=\frac{(C_t-X_t)^{1-\gamma}-1}{1-\gamma} \tag{3}$$

where the curvature parameter is assumed to be $\gamma \geqslant 0$. The reference level X_t is driven by external habits to the individual because it is determined by the history of average consumption in the economy.[10] The structure of the consumption reference level, X_t can be driven by the following process,

$$X_t=(1-\omega_t)\bar{C}_t, \tag{4}$$

with ω_t as time-varying fuction linking preferences to the aggregate time t, per capita private consumption, $\bar{C}_t$. We assume that the function $\omega_t=h(f_{1t},...,f_{kt})$, where f_{it} are unobserved fundamental risk factors for $i=1,...,k$. Given the economic condition, ω_t might be greater or smaller than 1. If $\omega_t>1$, the agent consumption C_t and the aggregate consumption $\bar{C}_t$ are complementary. The economic agent is altruistic in this case. Whereas, when $\omega_t<1$,

[10] Assuming internal habits determined by the history of individual consumption (as in Campbell and Cochrane, 1999) will not change our results.

C_t and $\bar{C}_t$ are substitutes and the agent is egoistic. In the special case where $\omega_t = 1$, the utility fuction reverts to the standard case with no reference level.

Under this specification of the instantaneous utility, the marginal rate of intertemporal substitution is then given by,

$$\begin{aligned} M_{t+1} &= \beta(\frac{C_{t+1} - X_{t+1}}{C_t - X_t})^{-\gamma} \\ &= \beta(\frac{C_{t+1}}{C_t})^{-\gamma}(\frac{S_{t+1}}{S_t})^{-\gamma}, \end{aligned} \tag{5}$$

where $S_t = \frac{C_t - X_t}{C_t}$ is the consumption surplus ratio. The local relative risk aversion can be formulated as,

$$CRRA_t = \frac{\gamma}{S_t}. \tag{6}$$

Using equation (4), the equilibrium consumption surplus ratio S_t can be reduced to,

$$S_t = h(f_{1t}, ..., f_{kt}), \tag{7}$$

here $h(.)$ links the unobserved fundamental risk factors $\{f_{1t}, ..., f_{kt}\}$ to the surplus ratio. Campbell and Cochrane (1999) proceed differently. Instead of writing down a law of motion for the habit level, they postulate a process for the surplus consumption ratio S_t. They assume that surplus consumption ratio (s_t in log form) evolves as a heteroscedastic AR(1) process. This process, which is ad-hoc in nature, has however some drawbacks. First, by ignoring the whole set of available information to the economic agent, it assumes that the reference level is an exogenous process which does not respond to economic conditions. Second, Campbell and Cochrane incorporate a sensitivity function, which controls how the surplus ratio is affected by current consumption shocks, with an implicit form specification depending on the past level of surplus consumption ratio. This predetermined specification make it hard to estimate the model in practice and very difficult to avoid an implausibly volatile risk-free rate usually associated with habit formation models. Our specification, unstead links the refernce level to economic fundamental factors. In fact, there is a growing body of literature on asset prices showing that there is a strong evidence that fundamental economic conditions are crucial determinants of equity premium.[11] The key question in this related literature is whether fluctuations in stock market returns have any link with the macroeconomic conditions, and if few estimated factors can effectively summarize all the information set driven from various economic time series. In this paper, we construct macro factors from a large

[11] See Lettau and Ludvigson, 2010 for a summary review

number of time series to proxy the macroeconomic fundamentals using the methodology of factor analysis. A large amount of economic information can then, be summarized by a few estimated factors.

As explained before, we construct 3 indices from a large panel representing broad categories of U.S. economic indicators. The consumption aggregate meant to summarize information set in the goods and services market and is widely used in the basic consumption-based models to capture variations in the investors' wealth. This factor is related to expected marginal utility growth, and hence to the expected path of consumption. In a time of good economic activity, it makes sense to save, buy bonds, and then consume more tomorrow.

Among the works explaining the evolution of financial asset prices, Chen, Roll and Ross (1986) and Fama (1998) argue that a long-term equilibrium relationship exists between stock prices and relevant macroeconomic variables. In these studies, it is found for example, that there exists a negative relation between inflation and stock prices. An inflation increase is likely to lead to economic tightening policies, which in turn increases the nominal risk-free rate. The inflation risk premium may then, explain a significant fraction of the financial asset returns.[12] In our model, we use 144 price series to estimate our inflation factor and include it in our specification.[13]

The status of the labor market and unemployment news is another helpful macroeconomic fundamental especially if we're interested in growth expectations and, then, in the effects on asset prices. Thus, if equity investors study the real sector data, they would be expected to revise their growth expectations given the state of the economy, i.e., contractions or expansions (Boyd, Hu and Jagannathan, 2005).[14] Hence, the relationship between labor market conditions and stock returns maybe seen as due to the increased uncertainty arising from the labor market side which leads to an increase in the equity risk premium. Here we consider 224 labor market time series and estimate one factor to be included in our model.

The last factor in our model is the monetary and financial factor. It is by now widely recognized that monetary aggregates and other financial market variables (interest rates for example) play a crucial role and impact significantly on asset prices (Bernanke and Kuttner, 2005). The literature documents, for example, that an unexpected change in the nominal interest rates (driven by monetary policy shocks) has significant and persistent effects on stock prices.[15]

[12] Expected and unexpected inflation are correlated with real asset prices. Buraschi and Jiltsov (2005) and Barr and Campbell (1997) report the negative relationship between unexpected inflation and real interest rates. Campbell and Shiller (1996), comforting these finding, extend the result to real stock returns.

[13] Detailed description of the economic series is given in the data appendix.

[14] See also Krueger (1996) who studies the market rationality of bond price responses to labor market news. In their study, Jagannathan and Wang (1993) and Boyd and Jagannathan (2005) find, for example, that stock returns and labor income growth rate are negatively correlated.

[15] See for instance, Bjørnland and Leitemo (2009), Craine and Martin (2004), Rigobon and Sack (2004) and Kuttner (2001).

These studies show that monetary policy affect real economic activity, and suggests that uncertainty in the policy can be a potential source of aggregate risk. This paper uses the French portfolios as long as 87 other variables to estimate the monetary and financial factor to be included in the second stage of our modelisation.

2.3 Discussion Issues and Derivations

In order to be able to derive the equity premium and the riskfree rate, we assume that the vector of the systematic factors $f_t = (f_{1t}, ..., f_{kt})$, that is, the vector of factors is composed of economic fundamentals. The second key assumption is that the log-return, the consumption growth rate and the k-factors are jointly conditionally normally distributed with mean μ_t and covariance matrix Ω_t.

We first specify the surplus consumption ratio S_t as,

$$S_t = \exp\left(\sum_{i=1}^{k} \alpha_i f_{it}\right), \tag{8}$$

with α_i's being structural parameters linking the surplus consumption ratio to the fundamental factors. Using the form (8) for S_t, the marginal rate of intertemporal substitution (in log form) is given by:

$$m_{t+1} = \log(\beta) - \gamma g_{t+1} - \gamma\left(\sum_{i=1}^{k} \alpha_i f_{it+1}\right) \tag{9}$$

where g_t is the consumption growth rate. Equation (9) leads to formulate the riskfree rate under these assumptions as follow:

$$\begin{aligned} r_{f,t+1} \quad = \quad & -\log(\beta) + \gamma E_t g_{t+1} - \frac{\gamma^2 Var_t(g_{t+1})}{2} + \gamma\left(\sum_{i=1}^{k} \alpha_i E_t f_{it+1}\right) \\ & -\gamma^2\left(\sum_{i=1}^{k} \alpha_i Cov_t(g_{t+1}, f_{it+1})\right) - \frac{\gamma^2\left(\sum_{i=1}^{k} \alpha_i^2 Var_t(f_{it+1})\right)}{2}, \end{aligned} \tag{10}$$

where the first three terms are the usual elements in the asset price model. The remaining three terms are new. In equation (10), the first, second and fourth terms capture the substitution effect while the third and the last two terms capture the precautionary saving effect.

The equity premium $E_t(r_{t+1}) - r_{f,t+1}$ can thus be easily computed. Expected asset returns equal the risk-free rate plus a premium for bearing risk, which depends on the covariance of the asset returns with the marginal utility of consumption, plus the covariance of the return with economic fundamentals. Assets that co-vary positively with consumption – that is, they payoff in states when consumption is high and marginal utility is low – command a high

premium since via its destabilizing effect on consumption. Furthermore, our model implies that even if the aggregate consumption level is constant, a change in economic conditions generates a change in consumption surplus ratio and then a significant impact on the risk premium. The equity premium is then given by,

$$E_t\left(r_{t+1}-r_{f,t+1}\right)=-\frac{Var_t(r_{t+1})}{2}+\gamma Cov_t(r_{t+1},g_{t+1})+\gamma\left(\sum_{i=1}^{k}\alpha_i Cov_t(r_{t+1},f_{i,t+1})\right). \tag{11}$$

where the first two term are standard. The first term results from the Jensen's inequality while the second captures the consumption risk premium. The last term captures the total risk premium related to the economic conditions risks.

The induced local CRRA is then given by,

$$CRRA_{t+1}=\gamma\exp\left\{-\sum_{i=1}^{k}\alpha_i f_{i,t+1}\right\}. \tag{12}$$

The previous formula for the consumption surplus ratio is equivalent to the following more intuitive specification $X_t = \alpha_t\overline{C}_t$,where $\overline{C}_t$ is the aggregate time t, per capita private consumption and α_t is given by $\alpha_t = 1-\exp\left(\sum_{i=1}^{k}\alpha_i f_{i,t}\right)$. This formulation shows that the economic agent links his reference level X_t to the aggregate per capita consumption level with a slope that depends on fundamental factors. The stock of reference is weighted by the parameter α_t which indexes the importance of the comparison of consumption and the reference level in the instantaneous utility function. If $\alpha_t = 0$ the habit in consumption is not considered, and only the agent level of consumption is important. When α_t is in the interval [0, 1), the higher α_t, the greater the importance of consumption compared with the reference level.

A key parameter in economics is the elasticity of intertemporal substitution (EIS), which measures the extent to which economic agent shifts consumption flow across time in response to changes in the effective rate of return. Given our preferences specification, the direct elasticity of substitution between consumption in periods t and $t+1$ (EIS) is computed, after some algebraic manipulations, as,

$$EIS_t=\frac{1}{\gamma}\frac{S_t^{\gamma}+\exp\left((\gamma-1)\,g_{t+1}\right)S_{t+1}^{\gamma}}{S_t^{\gamma-1}+\exp\left((\gamma-1)\,g_{t+1}\right)S_{t+1}^{\gamma-1}}.$$

In the special case of no habit (i.e. $X_t = 0$ and $S_t = 1, \forall$ t) this form reduces to the traditional result with power utility where $CRRA_t = \gamma$, and $EIS_t = \frac{1}{\gamma}$, referred to in this paper as the benchmark model.

3 Estimation Approach and Data

3.1 Specification of the Conditional Model

The full conditional model can be written in the form of three key equations:

$$r^e_{t+1} = -\frac{Var_t(r^e_{t+1})}{2} + \gamma Cov_t(r^e_{t+1}, g_{t+1}) + \gamma \sum_{i=1}^{k} \alpha_i Cov_t(r^e_{t+1}, f_{i,t+1}) + \varepsilon_{1,t+1}, \tag{13}$$

$$g_{t+1} = \beta_{c,0} + \lambda_c g_t + \sum_{i=1}^{k} \beta_{c,i} f_{i,t} + \varepsilon_{2,t+1}, \tag{14}$$

$$f_{j,t+1} = \beta_{F_j,0} + \lambda_{F_j} g_t + \sum_{i=1}^{k} \beta_{F_j,i} f_{i,t} + \varepsilon_{j,t+1}, \quad \text{for } j = 1, ..., k, \tag{15}$$

where r^e_t is the excess return, $\varepsilon_{1,t}$ is the returns innovation, g_t is the consumption growth rate, $\varepsilon_{2,t}$ is unexpected part of the consumption growth rate and, $f_{j,t}$ and $\varepsilon_{j,t}$ are the fundamental factor j and its innovation.

The conditional volatility of the model is specified following Engle (2002). Let $\varepsilon_t = (\varepsilon_{1,t}, ..., \varepsilon_{n,t})'$ where $n = k + 2$, and assume a GARCH(1,1) model for each conditional variance, that is

$$\sigma^2_{i,t+1} = \sigma_i + \delta_i \sigma^2_{i,t} + \theta_i \varepsilon^2_{i,t}, \quad \text{for } i = 1, ..., n. \tag{16}$$

We also assume that

$$\varepsilon_t = \Omega_t^{\frac{1}{2}} u_t \quad \text{and} \quad u_t \mid \digamma_{t-1} \sim N(0, I) \tag{17}$$

where I is an $n \times n$ identity matrix and $\digamma_{t-1}$ is the set including all the information available up to time $t-1$.

In the dynamic conditional correlation model (DCC), the covariance matrix is decomposed into

$$\Omega_t = D_t R_t D_t \tag{18}$$

where D_t is a diagonal matrix of time varying standard deviations from univariate GARCH processes, i.e. $D_t = diag(\sigma_{i,t})$, and R_t is the conditional correlation matrix whose diagonal elements are ones and the off-diagonal elements are the conditional correlations. By the definition of the conditional correlation matrix all off-diagonal elements have to be equal or less than one in absolute values. This matrix must be symmetric positive definite. To guarantee that, we assume the following formulation for R_t,

$$R_t = Q_t^{*-1} Q_t Q_t^{*-1}, \tag{19}$$

where $Q_t = [Q_{ij,t}]$ is a symmetric positive definite matrix of free parameters, Q_t^* is the diagonal matrix with the square root of the diagonal elements of Q_t. To guarantee the stationarity and positivity of the variance components, we assume that $\sigma_i > 0$, $\theta_i \geqslant 0$, $\delta_i \geqslant 0$ and $\theta_i + \delta_i < 1$ for $i, j = 1, ..., n$. Last, note that our work focuses on the equity premium puzzle, not on the dynamics of the volatility per se, we then assume that R_t is constant implying that Q_t is also constant over time.

3.2 Estimation Approach

In this section we present a framwork to generate estimated factors in a data-rich environement and apply them to estimate our structural model. The estimation strategy consists on two steps. In the first step we estimate the latent economic factors $f_{i,t}$ and then we use these values in the process of the estimation of the structural parameters in the second step.

We assume that there is a set of many observable economic variables, $z_{i,1}, ..., z_{i,N_i}$ $(i = 1, ..., L)$, that depend on a small number of latent factors. This relation is expressed in a matrix form as,

$$Z_i = F_i \Lambda_i' + E_i, \tag{20}$$

where $Z_i = (z_{i,1}, ..., z_{i,N_i},)$ is a set of matrices of many observable economic variables that capture the same aspect of the economy and where each z_{i,n_i} $(n_i = 1, .., N_i)$ represent a single observed variable consisting of T observations, F_i is a $T \times r_i$ matrix of r_i unobservable common factors ($r = \sum_{i=1}^{L} r_i$), Λ_i are a $N_i \times r_i$ matrices of factor loadings and E_i are a $T \times N_i$ matrices of idiosyncratic errors that are uncorrelated with the components of F_i. The latent factors or latent variables F_i capture the state of the economy. Their estimates are obtained by solving the following minimization program

$$\min_{F_i, \Lambda_i} Trace \left\{ \frac{(Z_i - F_i \Lambda_i')(Z_i - F_i \Lambda_i')'}{N_i T} \right\}, \tag{21}$$

subject to

$$\frac{F_i^{'} F_i}{T} = I_{r_i}, \tag{22}$$

where I_{r_i} is an $r_i \times r_i$ dimensional identity matrix. Since $F_i \Lambda_i' = F_i A A^{-1} \Lambda_i' = F_i^* \Lambda_i^{*\prime}$ for any invertible $r_i \times r_i$ matrix A, the factors and the factor loadings are not jointly identified. Thus, the normalization (22) is an identification constraint. It can be shown that each estimated factor $\widetilde{F}_i$ is the eigenvector (multiplied by $\sqrt{T}$) associated with the

largest eigenvalue of the matrix $\frac{Z_i Z_i'}{TN_i}$. Bai and Ng (2002) and Stock and Watson (2002) set up a convergence results of the estimated factors $(\widetilde{F}_i)_{i=1,..,r_i}$ to their true scaled counterparts $(F_i)_{i=1,..,r_i}$ as T and N both tend to infinity.

Once the factors are estimated we substitute them in the system (13)-(15) and estimate the structural parameters by the maximum likelihood estimator. In the estimation process, we initialize Q_t by the sample unconditional covariance matrix of the standardized disturbances u_t.

3.3 Data Description

In our empirical work, we use US monthly data covering the period 1960:1–2007:12. The selected data aim to represent broad categories of macroeconomic time series and are used to estimate the latent factors. We split our panel into three groups. The first group includes 87 variables of the money market aggregates and financial series (money stocks, interest rates, reserves, bond yields and stock prices) plus the one hundred French portfolios publicly available at French' website.[16] The second group contains 224 series of labour market aggregates (number of employees, average hours worked, salaries, labour force, unemployment rates, unemployment durations, wages and compensations, personal incomes and compensations). The last group includes 144 series of price indices (commodity prices and CPIs). All series are taken from the DRI-McGraw–Hill Basic Economics database except for the financial portfolios taken from the French data library. A detailed description and transformations of the data and sources is given in the Data Appendix B. Common factors, one for each group, are then estimated by principal component analysis.

The excess return is computed as the difference between the market return and riskfree rate. The market return is measured by the change of the logarithm of the gross nominal value-weighted return associated with the global index of the NYSE, NASDAQ and AMEX markets. The riskfree rate is approximated by the net nominal rate on one-month Treasury bills. Also, the consumption growth rate is measured as the first difference of the logarithm of consumption. Consumption corresponds to the seasonally adjusted real personal expenditures on nondurable goods and services, normalized by the total civilian population. The series used to construct the excess market return are collected from the Center for Research in Security Prices. The series required to measure consumption change are from the U.S. Department of Commerce (Bureau of Economic Analysis and Census Bureau).

[16]Data available at: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

4 Empirical Results

In this section we present our estimation results. The first step of the examination involves the estimation of the economic factors using the principal component analysis. For each group of variables reported in section 3.3 we take, as representative of the group, one factor that is related to the maximum eigenvalue. The factor that explain the large part of the variability of the group relative to the remaining factors is considered. For the money and financial market aggregates, the first factor explains 76.15% of the total variation. For the Labour market group, the first factor explains 37.11% of the total variation. The most dominant factor explains 43% of the total variation of the growth rate of the price indexes.

The money and financial market factor is highly correlated with the variable: *Bond Yield - Bond Buyer's Municipal 20-BOND AVG*, and the French portfolio industry returns.

[Figure 1 about here]

Figure 1 plots of the 12-month moving average of the money and financial market factor (f_1) and the U.S. bond yield data over time. Shaded areas indicate dates designated by the National Bureau of Economic Research (NBER) as recession periods. The figure shows that the two variables are highly linked and both are countercyclical. They reach peaks in the economic recession periods, and reach troughs in the economic expansion periods.

The labour market group's factor is highly correlated with variables: *Civilian Labor Force: Employed, Total employees on nonfarm payrolls*, *indexes of aggregate weekly hours of production* and *average weekly earnings of production or nonsupervisory workers on private nonfarm payrolls*.

[Figure 2 about here]

Figure 2 illustrates the 12-month moving average of the labor market factor (f_2) and the total employment growth rate. The two variables are strongly correlated and both are procyclical. They rich their lowest values faster in the recession periods and they adjust slowly in the expansion periods.

The inflation factor is highly correlated with the consumer price indexes growth rate of commodities: *CPI-W: Commodities*, *CPI for energy*, *CPI for nondurables* and *CPI for fuel, oil, coal and bottled gas.*

[Figure 3 about here]

Figure 3 shows the plot of the 12-month moving average of the price factor (f_3) and the growth rate of CPI for commodities. The two variables are extremely volatile. They rich their highest levels of volatility in the period after 2005. The rampant commodity prices are the result of the big jumps of the oil price. This phenomenon captures the effect of the supply shock on the economy.

The second step of the examination involves the estimation of the parameters defining the intertemporal consumption model, i.e. the $[\gamma, \alpha_1, \alpha_2, \alpha_3]$ that govern the equity premium in equation (11), the CRRA in (12) and the surplus consumption ration in (8). The estimation results are summarized in Table (1) for our model and Table (2) for the benchmark model where the consumption is the only risk factor. The difference between the estimates in the two tables is appealing. From table (1), we find that all the four risk factors have a significant contribution in explaining the risk premium since all the parameters are statistically significant at any conventional level. More importantly, we find that the estimate of the curvature parameter γ of the utility function is equal to 1.0055.

[Table 1 about here]

We also estimate the benchmark traditional model where the only risk factor is the usual consumption risk, i.e. $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$. Table (2) shows that the estimate of the curvature parameter for the benchmark model is equal to 34.9603. This results are similar to what is found in the previous literature giving rise to the equity premium puzzle (Mehra and Prescott 1985) since the resulting γ is outside of the admissible range [0,10].

[Table 2 about here]

The implied relative risk aversion computed using the model's estimates is displayed in Figure (4). The plot shows that the relative risk aversion varies overtime. The induced time-variation in risk aversion is attributed to inflation uncertainty and economic shocks. The relative risk aversion is about 1.10 on average and ranges from 0.06 to 6.52 with a standard deviation of 0.52. In comparison, Hansen and Singleton's (1982, 1984) estimates for CRRA are statistically insignificant and are between 0.09 and 0.16, with a median of 0.14.

[Figure 4 about here]

In fact, the higher levels of risk aversion coincide with the middle to late 1970s and the early 1980s which are associated with the two negative oil supply shocks following the Arab-Israeli war in 1973, and the Iranian revolution in 1979. The august 1998 Russian financial crisis is another event with high risk aversion. The dramatically higher levels of the relative risk aversion are, however, realized in October and November 1987 which coincide with the well known stock market crash. These results reproduce the established theoretical foundations for the counter-cyclical risk aversion that is apparent in the data as in Routledge and Zin (2004).

[Figure 5 about here]

Figure (5) gives the elasticity of intertemporal substitution (EIS) time plot. The highest level of EIS is achieved in the period coinciding with the second oil shock. The mean EIS is 1.1233 with a minimum of 0.3846, a maximum of 9.7887 and a standard deviation of 0.6634. The mean of EIS is consistent with the economic theory and one cannot reject the null hypothesis of the mean of EIS being equal to 1 at any conventional significance level. We note that our model succeed in disentangling the CRRA from EIS which can be seen from the comparison of figures (4) and (5), where the two figures show different dynamic patterns.

[Table 3 about here]

As Table (3) reveals, our model produces an equity premium of 4.76% and a risk free rate of 1.31% versus 5.24% and 1.61% in the case of the benchmark model while these values are, respectively, 5.85% and 1.29% in the data.[17] Our model is, then, able to resolve the equity premium puzzle with plausible relative risk aversion (less than 10). Another success of our model compared to the benchmark model, is that it also resolves the Risk-free rate volatility puzzle. The model generates a standard deviation of 9.97% for the risk-free rate while the benchmark model generate a value as high as 102.60% compared to 3.64% in the data.

[Table 4 about here]

As shown in Table 4, the financial market risk explains 81.42% of the equity premium with a maximum of 91.60% attained in November 1987 (stock market crash). The labor market risk explains 12.18% of the total risk premium

[17] Table 3 shows the average real risk-free rate implied by our model and the benchmark model with a subjective discount factor of 0.735, i.e. $\beta = 0.735$.

while the consumption and inflation risk premium explain only 4.26% and 2.14% with a maximum of 9.73% and 31.44% and a minimum of 2.14% and 0% respectively. All the percentage premium risks have a leptokurtotic distributions as shown by the last row of Table 4. The inflation percentage risk premium is the most volatile with a standard-deviation of 5.66% while the financial market percentage risk premium has a negative skewness.

The countercyclical property, of the expected equity premium with business cycle conditions is a widely known fact, which is recognized as well-known evidence in much of financial economics literature (e.g. Fama and French (1989)). Figure 6 plots the model implied equity premium (dashed line) against the industrial production growth in the U.S (solid line). The shaded areas are NBER recessions. The plot shows that equity premium is largely countercyclical, being larger in bad times than in good times.

[Figure 6 about here]

Therefore, as shown for example in Mele (2007), the compensation investors require to invest in the stock market changes asymmetrically in response to variations in the economic conditions leading to a countercyclical risk premia. Intuitively, in the case of recessions or times of economic turbulences, which lead to an increase in risk aversion, the equity premium is higher than in the expansion phase of the business cycle. Equity premium fluctuations are, then, very sensitive to overall economic conditions, meaning that inflation, labor market conditions and money and financial markets as long as goods and services market have a huge impact on investors and policymakers decisions.

5 Conclusion

This paper has studied a class of consumption-based asset pricing model extending the standard C-CAPM model by including additional risk factors. The new sources of risk generate more dynamics to the discount factor enabling the model to resolve the equity premium and free-rate puzzles. Furthermore, and while the traditional model is a pure one-factor model, in our specification, habit or reference level responses to aggregate consumption with time-varying slope. This slope depends on fundamental economic factors that are directly related to business cycle.

As a result, the equity premia and risk free rate in this model are in line with the data and produced with plausible values of CRRA ranging from 0 to 10. Moreover, we find some discrepancies between the dynamics of CRRA and EIS, which is in line with what is documented in the previous literature. Low EIS implies that consumers would like to over-smooth consumption over time. That is, preferences with a low EIS imply low risk premia in economies with consumption smoothing. Our model avoid this to happens, since it breaks the link between the EIS and the CRRA. Moreover, the mean values of EIS and CRRA generated by our model are statistically higher than 1 at any conventional significance level, which implies that in average the EIS is no longer the reciprocal of the CRRA (as usually found in the literature). In addition, the risk-free rate volatility is in line with what is found in the data, resolving another asset pricing puzzle with plausible value of the subjective discount factor ($0 \leq \beta \leq 1$).

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Table 1: Structural parameter estimates of our model as long with their standard errors and T-Stats

Parameter	Estimate	Std. Error	T-Stat	P-Value
γ	1.0055	0.0293	34.3144	0.0000
α_1	0.2741	0.0098	27.9765	0.0000
α_2	0.3300	0.0800	4.1270	0.0000
α_3	0.5520×10^{-7}	0.0089×10^{-8}	614.1651	0.0000
Log Likelihood				1041.3781
Akaike Information Criterion				-1974.7562
Schwarz Information Criterion				-1396.8605

Table 2: Structural parameter estimates of benchmark model as long with their standard errors and T-Stats

Parameter	Estimate	Std. Error	T-Stat	P-Value
γ	34.9603	3.7783	9.2529	0.0000
Log Likelihood				507.6846
Akaike Information Criterion				-991.3692
Schwarz Information Criterion				-862.9898

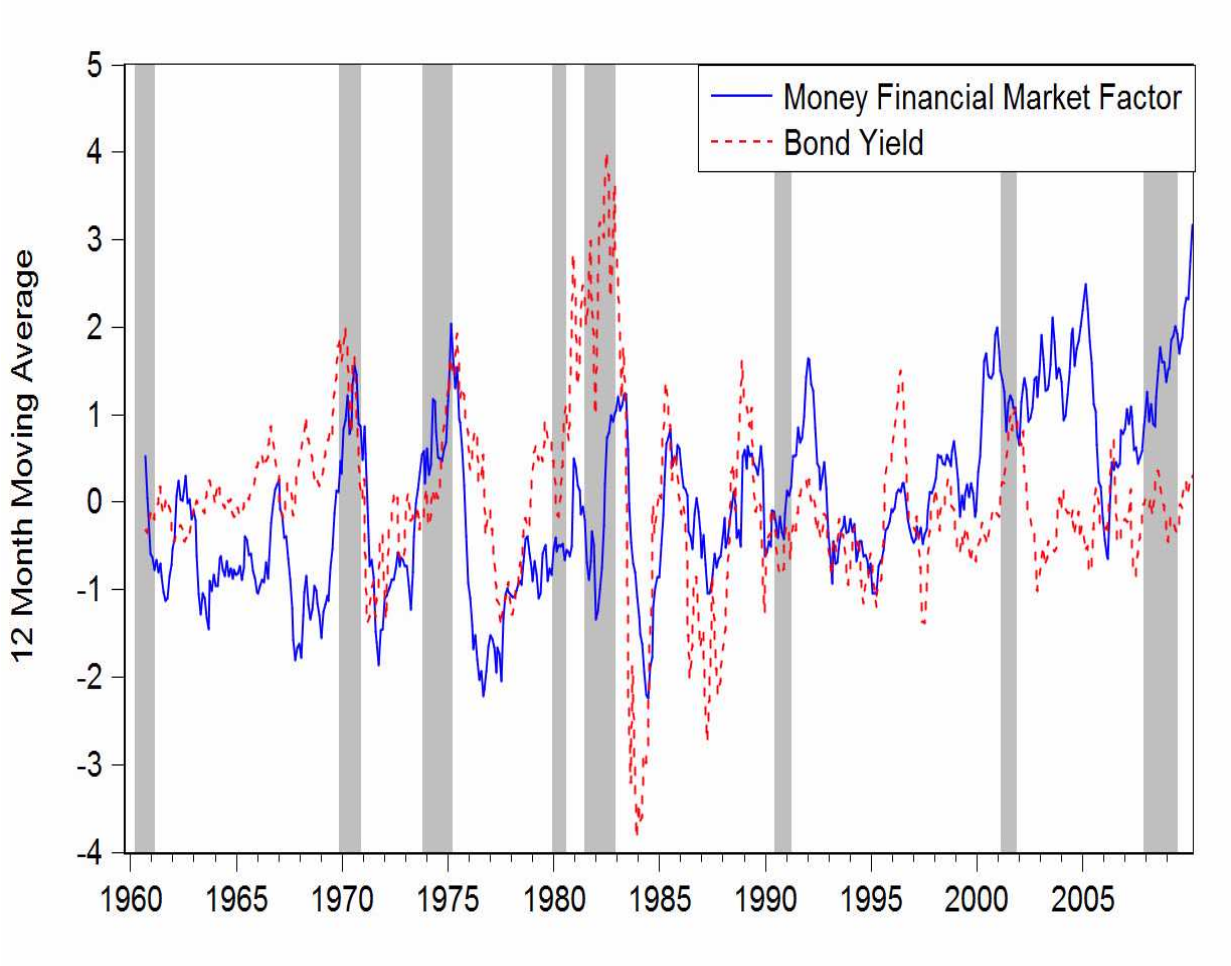
Table 3: Mean and Standard deviation of the data, the benchmark model and our model implied premium and risk-free rate

Statistic	Data		Benchmark Model		Our Model	
	Premium	Risk-free	Premium	Risk-free	Premium	Risk-free
Mean	0.0585	0.0129	0.0524	0.0161	0.0476	0.0131
Standard deviation	0.5207	0.0364	0.0612	1.0260	0.0210	0.0997

Table 4: Descriptive statistics of the data related to the percentage of each factor premium in the total premium

PREMIUM	Consumption	Financial Market	Inflation	Labour Market
Mean	0.0426	0.8142	0.0214	0.1218
Median	0.0410	0.8285	0.0001	0.1217
Maximum	0.0973	0.9160	0.3144	0.2241
Minimum	0.0214	0.5676	0.0000	0.0625
Std. Dev.	0.0084	0.0497	0.0566	0.0170
Skewness	2.1659	−2.7346	3.2722	1.3145
Kurtosis	12.3548	11.3346	13.4561	9.3616

Figure 1: Money, Credit and Financial Factor



The shaded areas are NBER recessions. The sample period is 1960-2007.

Figure 2: Labor Market Factor

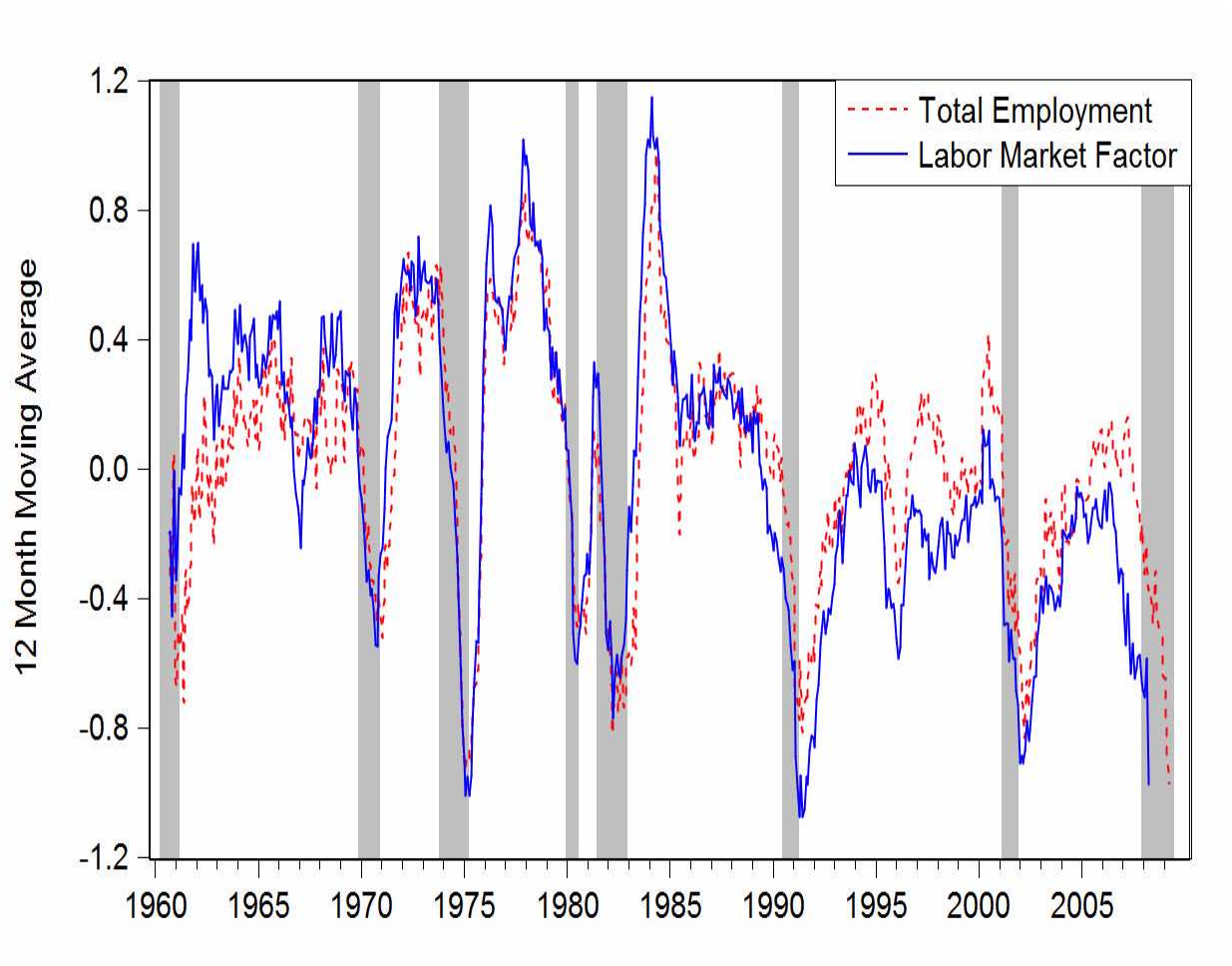
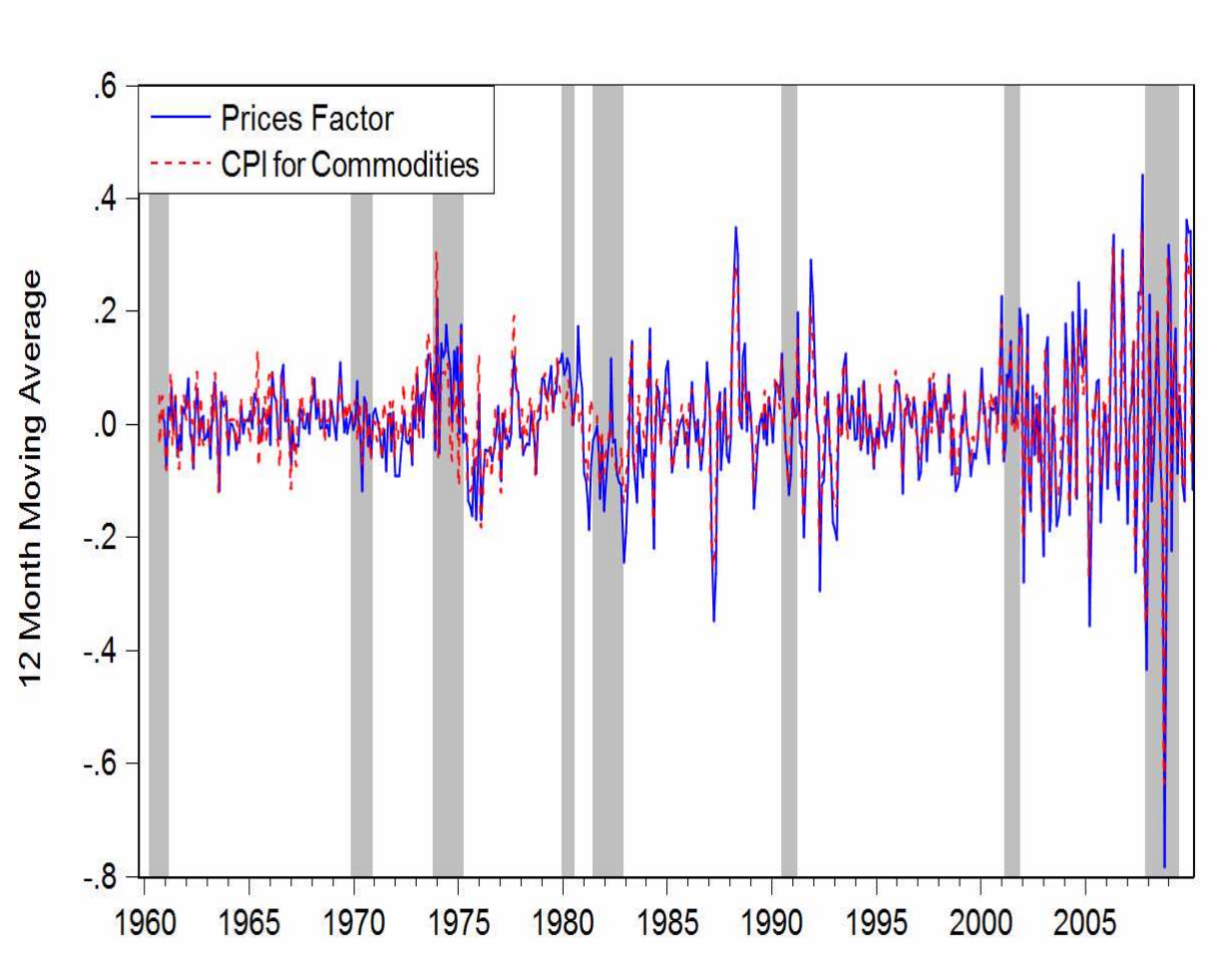
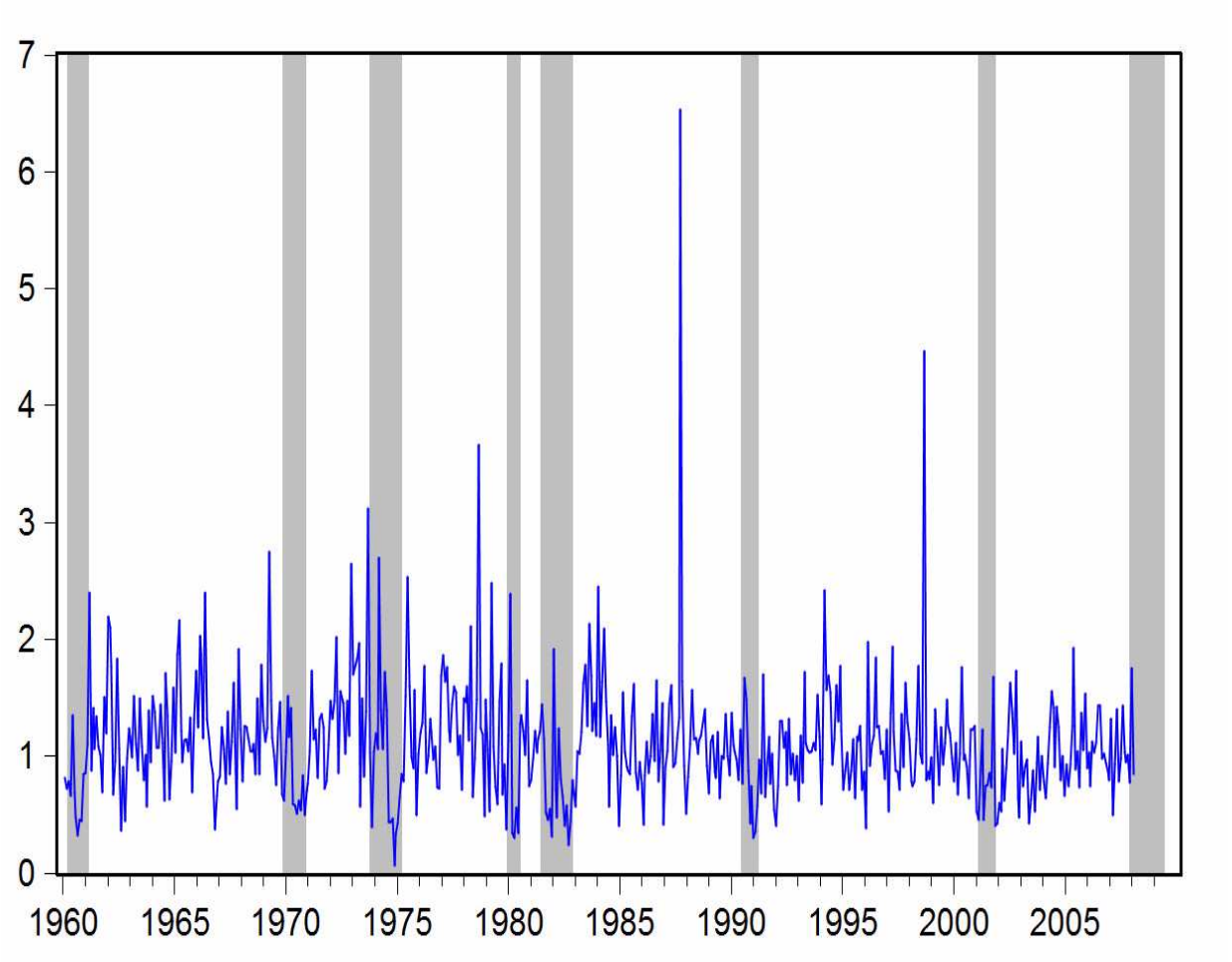


Figure 3: Prices Factor



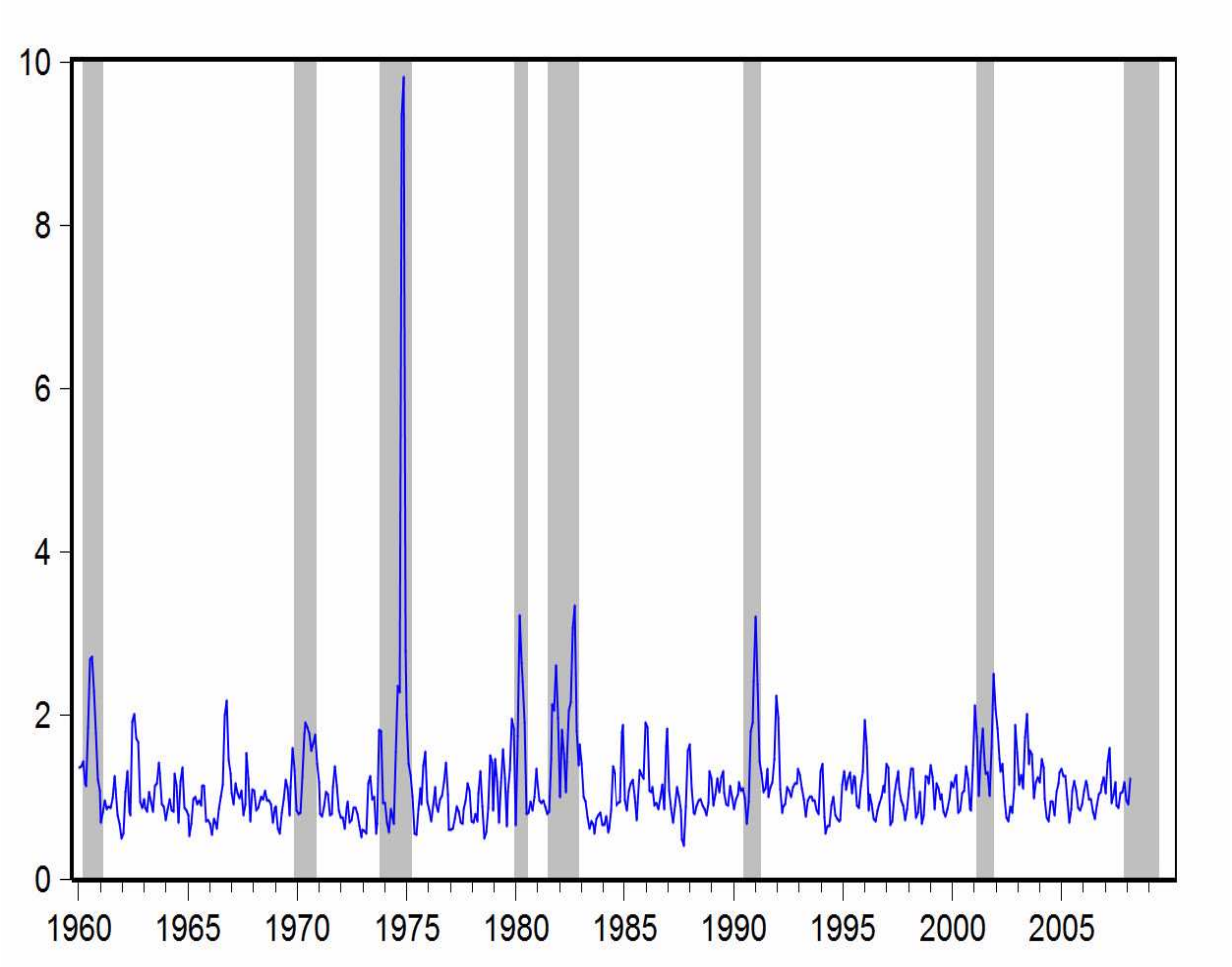
The shaded areas are NBER recessions. The sample period is 1960-2007.

Figure 4: Model Implied CRRA



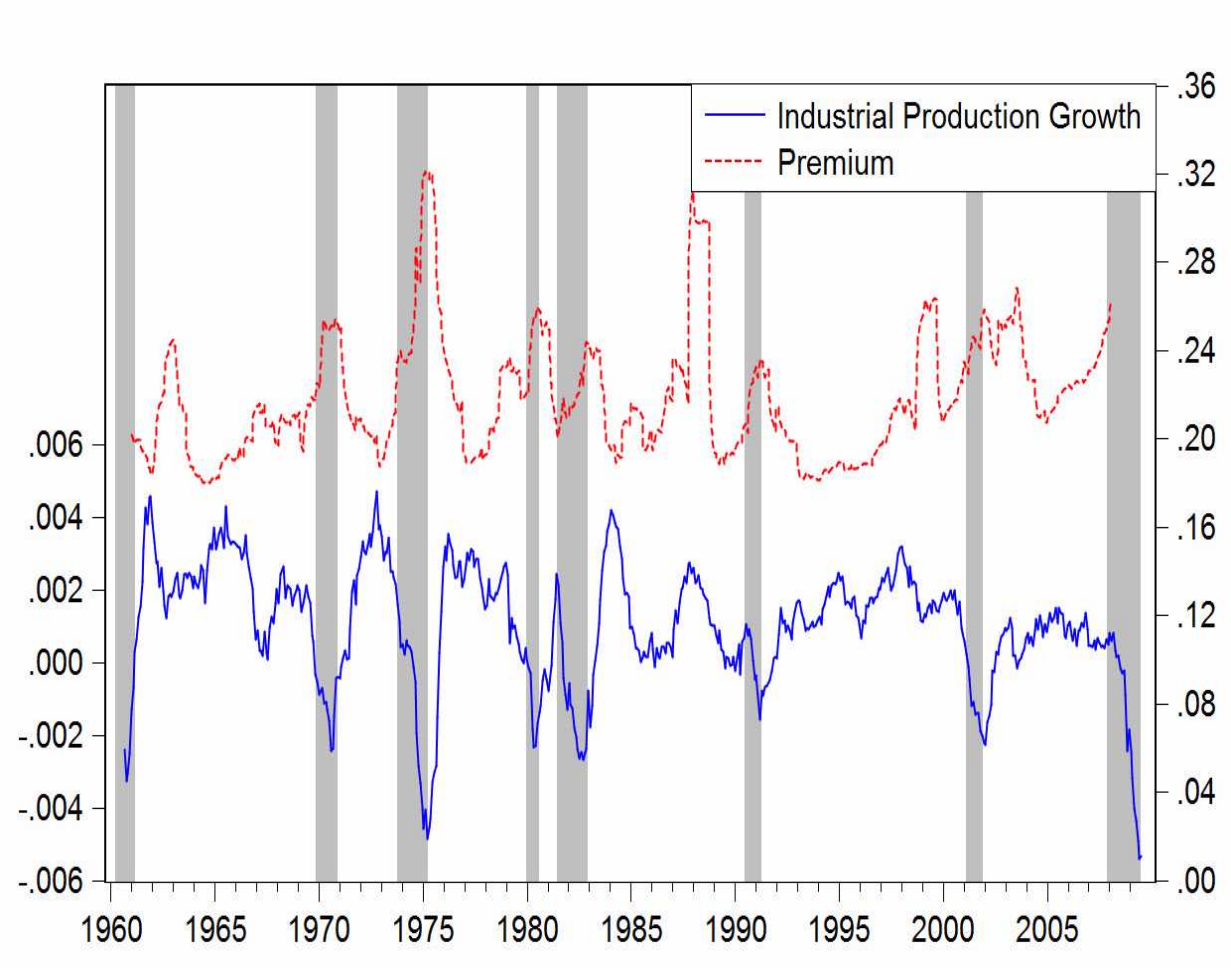
The shaded areas are NBER recessions.

Figure 5: Model Implied EIS



The shaded areas are NBER recessions.

Figure 6: Model Implied Risk Premium and the U.S Industrial Production Growth



The shaded areas are NBER recessions. The sample period is 1960-2007.

Appendix A: Data Description and Sources

The economic variables used to construct the latent factors briefly exposed in Section X. The data are presented as follows: series code, series mnemonic, series description and transformation code. The series were taken directly from the DRI-McGraw–Hill Basic Economics database. The portfolio returns are collected from the Fama-French data library, which is available from French's web page.[18]

The mnemonics of data from DRI-McGraw–Hill are the original ones. The abbreviations appearing in the data definitions are: SAD for data seasonally adjusted, NSAD for data not seasonally adjusted, SAARD for data seasonally adjusted at an annual rate and FRBD for Federal Reserve Board. The data are presented as follows: series code, series mnemonic, transformation code and series description. The data are transformed to be stationary and then standardized to have mean zero and unit variance. The transformation codes are no transformation=1, First difference=2, logarithm=3, First difference of logarithms=4 and Second difference of logarithms=5. Data available from authors upon request.

Money and Financial Market Variables and transformation:

#	Code	Trans	Long Name
1	FM1	2	MONEY STOCK: M1(CURR,TRAV.CKS,DEM DEP,OTHER CKABLE DEP)(BIL$,SA)
2	FM2	2	MONEY STOCK:M2(M1+ONITE RPS,EURO$,G/P&B/D MMMFS&SAV&SM TIME DEP(BIL$,SA)
3	FMFBA	2	MONETARY BASE, ADJ FOR RESERVE REQUIREMENT CHANGES(MIL$,SA)
4	FMNC2	2	MONEY STOCK: NONTRANSACTION COMPONENTS IN M2 (BIL$,SA)
5	FMRNBA	2	DEPOSITORY INST RESERVES:NONBORROWED,ADJ RES REQ CHGS(MIL$,SA)
6	FMRQA	3	DEPOSITORY INST RESERVES:REQUIRED,ADJ FOR RES REQ CHGS(MIL$,SA)
7	FMRRA	3	DEPOSITORY INST RESERVES:TOTAL,ADJ FOR RESERVE REQ CHGS(MIL$,SA)
8	FMSCU	3	MONEY STOCK: CURRENCY HELD BY THE PUBLIC, (BIL$,SA)
9	FMSD	3	MONEY STOCK:DEMAND DEPOSITS (BIL$,SA)
10	FMST	2	MONEY STOCK:SMALL TIME DEPOSITS, TOTAL (BIL$,SA)
11	FMSTB	1	MONEY STOCK:SMALL TIME DEPOSITS @ COML BANKS (BIL$,SA)
12	FMSTC	1	MONEY STOCK: TRAVELERS CHECKS (BIL$,SA)

[18] Available at: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

13 FMSTT 4 MONEY STOCK:SMALL TIME DEPOSITS @ THRIFT INSTS (BIL$,SA)

14 FMSV 4 MONEY STOCK:SAVINGS DEPOSIT & MMDAS ,TOTAL (BIL$,SA)

15 FMSVC 2 MONEY STOCK:SAVINGS DEPOSIT & MMDAS @ COML BANKS(BIL$,SA)

16 FMSVT 2 MONEY STOCK:SAVINGS DEPOSIT & MMDAS @ THRIFT INSTS(BIL$,SA)

17 FY20M 2 BOND YIELD: BOND BUYERS MUNICIPAL 20-BOND AVG.(% PER ANNUM)

18 FYAAAC 2 BOND YIELD: MOODYS AAA CORPORATE (% PER ANNUM)

19 FYAC 4 BOND YIELD: MOODYS A CORPORATE (% PER ANNUM,NSA)

20 FYAVG 4 BOND YIELD: MOODYS AVERAGE CORPORATE (% PER ANNUM)

21 FYBAAC 4 BOND YIELD: MOODYS BAA CORPORATE (% PER ANNUM)

22 FYBAC 4 INTEREST RATE: BANKERS ACCEPTANCES, 3-MONTH (% PER ANNUM,NSA)

23 FYCAA 4 BOND YIELD: MOODYS AA CORPORATE (% PER ANNUM,NSA)

24 FYFF 4 INTEREST RATE: FEDERAL FUNDS (EFFECTIVE) (% PER ANNUM,NSA)

25 FYGM3 4 INTEREST RATE: U.S.TREASURY BILLS,SEC MKT,3-MO.(% PER ANN,NSA)

26 FYGM6 4 INTEREST RATE: U.S.TREASURY BILLS,SEC MKT,6-MO.(% PER ANN,NSA)

27 FYGT1 4 INTEREST RATE: U.S.TREASURY CONST MATURITIES,1-YR.(% PER ANN,NSA)

28 FYGT10 4 INTEREST RATE: U.S.TREASURY CONST MATURITIES,10-YR.(% PER ANN,NSA)

29 FYGT3 4 INTEREST RATE: U.S.TREASURY CONST MATURITIES,3-YR.(% PER ANN,NSA)

30 FYGT5 4 INTEREST RATE: U.S.TREASURY CONST MATURITIES,5-YR.(% PER ANN,NSA)

31 FYIND 4 BOND YIELD: MOODYS AVERAGE INDUSTRIAL (% PER ANNUM)

32 FYPR 4 PRIME RATE CHG BY BANKS ON SHORT-TERM BUSINESS LOANS(% PER ANN,NSA)

33 FYPUT 4 BOND YIELD: MOODYS AVERAGE PUBLIC UTILITY (% PER ANNUM)

34 FZCMRQ 4 DEPOSITORY INST RESERVES:REQUIRED,NOT ADJ RES REQ CHGS(MIL$,NSA)

35 FZCMRR 4 DEPOSITORY INST RESERVES:TOTAL,NOT ADJ RES REQ CHGS(MIL$,NSA)

36 FZFBA 4 MONETARY BASE, ADJ FOR RESERVE REQUIREMENT CHANGES (MIL$,NSA)

37 FZM1 4 MONEY STOCK:M1(CURR,TRAV.CKS,DEM.DEP.,OTHER CKABLE DEP)(BIL$,NSA)

38 FZMD 4 MONEY STOCK:DEMAND DEPOSITS, TOTAL (BIL$,NSA)

39 FZMDFC 4 MONEY STOCK:DEMAND DEPOSITS DUE TO FOREIGN COML BANKS(BIL$,NSA)

40 FZMDFO 4 MONEY STOCK:DEMAND DEP DUE TO FOREIGN OFFICIAL INSTS(BIL$,NSA)

41 FZMDUC 2 MONEY STOCK:US GOVT DEM DEP @ COML BANKS (BIL$,NSA)

42 FZMDUF 2 MONEY STOCK:US GOVT DEM DEP @ FEDERAL RESERVE BANKS (BIL$,NSA)

43 FZMDUS 2 MONEY STOCK:US GOVT DEMAND DEPOSITS, TOTAL (BIL$,NSA)

44 FZMFB 2 MONETARY BASE, NOT ADJ FOR RESERVE REQ CHANGES (MIL$,NSA)

45 FZMNC2 2 MONEY STOCK: NONTRANSACTION COMPONENTS IN M2 (BIL$,NSA)

46 FZMRNB 2 DEPOSITORY INST RESERVES:NONBORROWED,NOT ADJ RES REQ CHGS(MIL$,NSA)

47 FZMS2 2 MONEY STOCK:M2(M1+ONITE RPS,EURO$,G/P&B/D MMMFS&SAV&SM TIME DEP(BIL$,

48 FZMSCU 2 MONEY STOCK:CURRENCY HELD BY THE PUBLIC(BIL$,NSA)

49 FZMST 2 MONEY STOCK:SMALL DENOMINATION TIME DEPOSITS, TOTAL(BIL$,NSA)

50 FZMSTB 2 MONEY STOCK:SMALL DENOMINATION TIME DEP @ COML BANKS (BIL$,NSA)

51 FZMSTC 2 MONEY STOCK: TRAVELERS CHECKS (BIL$,NSA)

52 FZMSTT 2 MONEY STOCK: SMALL DENOM TIME DEPOSITS AT THRIFT INSTS(BIL$,NSA)

53 FZMSV 2 MONEY STOCK:SAVINGS DEPOSIT & MMDAS ,TOTAL (BIL$,NSA)

54 FZMSVC 2 MONEY STOCK:SAVINGS DEPOSIT & MMDAS @ COML BANKS(BIL$,NSA)

55 FZMSVT 2 MONEY STOCK:SAVINGS DEPOSIT & MMDAS @ THRIFT INSTS(BIL$,NSA)

56 FZMTFO 2 MONEY STOCK:TIME&SAV DUE TO FOREIGN OFFICIAL INSTS&BANKS(BIL$,NSA)

57 DCOINC 2 COMPOSITE INDEX OF 4 COINCIDENT INDICATORS(87=100,SA)

58 DLAGG 2 COMPOSITE INDEX OF 7 LAGGING INDICATORS(87=100,SA)

59 DLEAD 2 COMPOSITE INDEX OF 11 LEADING INDICATORS(87=100,SA)

60 DRATE 2 RATIO, COINCIDENT INDEX TO LAGGING INDEX(87=100,SA)

61 EEPS 2 PETROLEUM PRODUCTS:TOTAL(THOUS BARRELS/DAY)

62 F6CMB 2 DEPOSITORY INST RESERVES: TOTAL BORROWINGS AT RES BANKS(MIL$,NSA)

63 F6CMRE 2 DEPOSITORY INST RESERVES: EXCESS (MIL$,NSA)

64 F6MR 2 DEPOSITORY INST RESERVES: BALANCES WITH F.R.BANKS (MIL$,NSA)

65 FBO 2 FEDERAL BUDGET: NET OUTLAYS (BIL$,NSA)

66 FCFR 2 ALL MEMBER BANKS: FREE RESERVES (MIL$,NSA)

67 FCLBMC 2 WKLY RP LG COML BANKS:NET CHANGE COML & INDUS LOANS(BIL$,SAAR)

68 FCLNBW 2 C AND I LOANS OUTSTANDING,PLUS NONFIN COMML PAPER(MIL$,SA)(BCD72)

69 FDM 2 PUBLIC DEBT: INT-BEARING MARKETABLE ISSUES (BIL$,EOM,NSA)

70 FPS6CA 2 STOCK PRICE INDEX: CANADA (1967=100;NSA)

71 FPS6FR 2 STOCK PRICE INDEX: FRANCE (1967=100;NSA)

72 FPS6IT 2 STOCK PRICE INDEX: ITALY (1967=100;NSA)

73 FPS6JP 2 STOCK PRICE INDEX: JAPAN (1967=100;NSA)

74 FPS6UK 2 STOCK PRICE INDEX: UNITED KINGDOM (1967=100;NSA)

75 FPS6WG 2 STOCK PRICE INDEX: WEST GERMANY (1967=100;NSA)

76 FSDJ 2 COMMON STOCK PRICES: DOW JONES INDUSTRIAL AVERAGE

77 FSDXP 2 S&PS COMPOSITE COMMON STOCK: DIVIDEND YIELD (% PER ANNUM)

78 FSPCOM 2 S&PS COMMON STOCK PRICE INDEX: COMPOSITE (1941-43=10)

79 FSPIN 2 S&PS COMMON STOCK PRICE INDEX: INDUSTRIALS (1941-43=10)

80 FSPXE 2 S&PS COMPOSITE COMMON STOCK: PRICE-EARNINGS RATIO (%,NSA)

81 HZSB5 4 HOUSE UNITS AUTHORIZED BY BLDG. PERMITS: 5 UNITS(THOU.U.)NSA

82 HZSBMW 4 HOUSE UNITS AUTHORIZED BY BUILDING PERMITS:MIDWEST(THOU.U.)NSA

83 HZSBNE 4 HOUSE UNITS AUTHORIZED BY BLDG. PERMITS:NORTHEAST(THOU.U)NSA

84 HZSBSU 4 HOUSE UNITS AUTHORIZED BY BUILDING PERMITS:SOUTH(THOU.U.)NSA

85 HZSBWT 4 HOUSE UNITS AUTHORIZED BY BUILDING PERMITS:WEST(THOU.U.)NSA

86 HZSMW 4 HOUSING STARTS:MIDWEST (THOUS.U.)N.S.A.

87 HZSNE 4 HOUSING STARTS:NORTHEAST (THOUS.U.)N.S.A.

88 HZSSOU 4 HOUSING STARTS:SOUTH (THOUS.U.)N.S.A.

89 HZSWST 4 HOUSING STARTS:WEST (THOUS.U.)N.S.A.

90 PI027 4 Contributions for Government Social Insurance, Billions of Dollars

Note about French Portfolios

French K. Portfolios from 1959 to 2008

The portfolios are constructed at the end of June. ME is market cap at the end of June. BE/ME is book equity at the last fiscal year end of

the prior calendar year divided by ME as of 6 months before formation. Firms with negative BE are not included in any portfolio. The annual returns are from January to December. Missing data are indicated by -99.99 or -999. The break points include utilities and include financials. The portfolios include utilities and include financials.

Labour Market Variables and transformation:

#	Code	Trans	Long Name
1	CES001	4	EMPLOYEES ON NONFARM PAYROLLS - TOTAL NONFARM THOUSANDS; SEASONALLY ADJUSTED
2	CES002	4	EMPLOYEES ON NONFARM PAYROLLS - TOTAL PRIVATE THOUSANDS; SEASONALLY ADJUSTED
3	CES003	4	EMPLOYEES ON NONFARM PAYROLLS - GOODS-PRODUCING THOUSANDS; SEASONALLY ADJUSTED
4	CES004	4	EMPLOYEES ON NONFARM PAYROLLS - NATURAL RESOURCES AND MINING THOUSANDS; SEASONALLY ADJUSTED
5	CES005	4	EMPLOYEES ON NONFARM PAYROLLS - LOGGING THOUSANDS; SEASONALLY ADJUSTED
6	CES006	4	EMPLOYEES ON NONFARM PAYROLLS - MINING THOUSANDS; SEASONALLY ADJUSTED
7	CES011	4	EMPLOYEES ON NONFARM PAYROLLS - CONSTRUCTION THOUSANDS; SEASONALLY ADJUSTED
8	CES015	4	EMPLOYEES ON NONFARM PAYROLLS - MANUFACTURING THOUSANDS; SEASONALLY ADJUSTED
9	CES016	4	EMPLOYEES ON NONFARM PAYROLLS - MANUFACTURING PRODUCTION WORKERS THOUSANDS; SEASONALLY ADJUSTED
10	CES017	4	EMPLOYEES ON NONFARM PAYROLLS - DURABLE GOODS THOUSANDS; SEASONALLY ADJUSTED
11	CES018	4	EMPLOYEES ON NONFARM PAYROLLS - DURABLE GOODS PRODUCTION WORKERS THOUSANDS; SEASONALLY ADJUSTED
12	CES020	4	EMPLOYEES ON NONFARM PAYROLLS - NONMETALLIC MINERAL PRODUCTS THOUSANDS; SEASONALLY ADJUSTED
13	CES033	4	EMPLOYEES ON NONFARM PAYROLLS - NONDURABLE GOODS THOUSANDS; SEASONALLY ADJUSTED
14	CES034	4	EMPLOYEES ON NONFARM PAYROLLS - NONDURABLE GOODS PRODUCTION WORKERS THOUSANDS; SEASONALLY ADJUSTED
15	CES046	4	EMPLOYEES ON NONFARM PAYROLLS - SERVICE-PROVIDING THOUSANDS; SEASONALLY ADJUSTED
16	CES047	4	EMPLOYEES ON NONFARM PAYROLLS - PRIVATE SERVICE-PROVIDING THOUSANDS; SEASONALLY ADJUSTED
17	CES048	4	EMPLOYEES ON NONFARM PAYROLLS - TRADE, TRANSPORTATION, AND UTILITIES THOUSANDS; SEASONALLY ADJUSTED
18	CES049	4	EMPLOYEES ON NONFARM PAYROLLS - WHOLESALE TRADE THOUSANDS; SEASONALLY ADJUSTED
19	CES053	4	EMPLOYEES ON NONFARM PAYROLLS - RETAIL TRADE THOUSANDS; SEASONALLY ADJUSTED
20	CES070	4	EMPLOYEES ON NONFARM PAYROLLS - RAIL TRANSPORTATION THOUSANDS; SEASONALLY ADJUSTED
21	CES080	4	EMPLOYEES ON NONFARM PAYROLLS - INFORMATION THOUSANDS; SEASONALLY ADJUSTED
22	CES088	4	EMPLOYEES ON NONFARM PAYROLLS - FINANCIAL ACTIVITIES THOUSANDS; SEASONALLY ADJUSTED

23 CES101 4 EMPLOYEES ON NONFARM PAYROLLS - PROFESSIONAL AND BUSINESS SERVICES THOUSANDS; SEASONALLY ADJD

24 CES116 4 EMPLOYEES ON NONFARM PAYROLLS - EDUCATION AND HEALTH SERVICES THOUSANDS; SEASONALLY ADJUSTED

25 CES128 4 EMPLOYEES ON NONFARM PAYROLLS - LEISURE AND HOSPITALITY THOUSANDS; SEASONALLY ADJUSTED

26 CES136 4 EMPLOYEES ON NONFARM PAYROLLS - OTHER SERVICES THOUSANDS; SEASONALLY ADJUSTED

27 CES140 4 EMPLOYEES ON NONFARM PAYROLLS - GOVERNMENT THOUSANDS; SEASONALLY ADJUSTED

28 CES141 4 EMPLOYEES ON NONFARM PAYROLLS - FEDERAL THOUSANDS; SEASONALLY ADJUSTED

29 CES142 4 EMPLOYEES ON NONFARM PAYROLLS - FEDERAL, EXCEPT POSTAL SERVICE THOUSANDS; SEASONALLY ADJUSTED

30 CES143 4 EMPLOYEES ON NONFARM PAYROLLS - U.S. POSTAL SERVICE THOUSANDS; SEASONALLY ADJUSTED

31 CES144 4 EMPLOYEES ON NONFARM PAYROLLS - STATE GOVERNMENT THOUSANDS; SEASONALLY ADJUSTED

32 CES145 4 EMPLOYEES ON NONFARM PAYROLLS - STATE GOVERNMENT EDUCATION THOUSANDS; SEASONALLY ADJUSTED

33 CES146 4 EMPLOYEES ON NONFARM PAYROLLS - STATE GOVERNMENT, EXCEPT EDUCATION THOUSANDS; SEASONALLY ADJUSTED

34 CES147 4 EMPLOYEES ON NONFARM PAYROLLS - LOCAL GOVERNMENT THOUSANDS; SEASONALLY ADJUSTED

35 CES148 4 EMPLOYEES ON NONFARM PAYROLLS - LOCAL GOVERNMENT EDUCATION THOUSANDS; SEASONALLY ADJUSTED

36 CES149 4 EMPLOYEES ON NONFARM PAYROLLS - LOCAL GOVERNMENT, EXCEPT EDUCATION THOUSANDS; SEASONALLY ADJUSTED

37 CES151 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – GOODS-PRODUCING HOURS; SEASONALLY ADJUSTED

38 CES152 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NATURAL RESOURCES AND MINING HOURS; SEASONALLY ADJUSTED

39 CES153 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – CONSTRUCTION HOURS; SEASONALLY ADJUSTED

40 CES154 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING HOURS; SEASONALLY ADJUSTED

41 CES155 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING OVERTIME HOURS HOURS; SEASONALLY ADJUSTED

42 CES156 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS HOURS; SEASONALLY ADJUSTED

43 CES157 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS OVERTIME HOURS HOURS; SEASONALLY ADJUSTED

44 CES159 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONMETALLIC MINERAL PRODUCTS HOURS; SEASONALLY ADJUSTED

45 CES168 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS HOURS; SEASONALLY ADJUSTED

46 CES169 4 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS OVERTIME HOURS HOURS; SEASONALLY ADJUSTED

47 CES275 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – GOODS-PRODUCING CURRENT DOLLARS ; SEASONALLY ADJUSTED

48 CES276 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NATURAL RESOURCES AND MINING CURRENT DOLLARS ; SEASONALLY ADJUSTED

49 CES277 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – CONSTRUCTION CURRENT DOLLARS ; SEASONALLY ADJUSTED

50 CES278 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS –MANUFACTURING CURRENT DOLLARS ; SEASONALLY ADJUSTED

51 CES279 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING EXCLUDING OVERTIME CURRENT DOLLARS ; SEASONALLY ADJUSTED

52 CES280 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS CURRENT DOLLARS ; SEASONALLY ADJUSTED

53 CES281 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS CURRENT DOLLARS ; SEASONALLY ADJUSTED

54 CES295 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - GOODS-PRODUCING INDEX BASE: 2002:100; SEASONALLY ADJUSTED

55 CES296 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - NATURAL RESOURCE AND MINING INDEX BASE: 2002:100; SEASONALLY ADJUSTED

56 CES297 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - CONSTRUCTION INDEX BASE: 2002:100; SEASONALLY ADJUSTED

57 CES298 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - MANUFACTURING INDEX BASE: 2002:100; SEASONALLY ADJUSTED

58 CES299 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - DURABLE GOODS INDEX BASE: 2002:100; SEASONALLY ADJUSTED

59 CES301 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - NONMETALLIC MINERAL PRODUCTS INDEX BASE: 2002:100; SEASONALLY ADJUSTED

60 CES310 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - NONDURABLE GOODS INDEX BASE: 2002:100; SEASONALLY ADJUSTED

61 CES335 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS GOODS-PRODUCING INDEX BASE 2002:100; SEASONALLY ADJUSTED

62 CES336 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS NATURAL RESOURCES AND MINING INDEX BASE 2002:100; SEASONALLY ADJUSTED

63 CES337 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS CONSTRUCTION INDEX BASE 2002:100; SEASONALLY ADJUSTED

64 CES338 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS MANUFACTURING INDEX BASE 2002:100; SEASONALLY ADJUSTED

65 CES339 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS DURABLE GOODS INDEX BASE 2002:100; SEASONALLY ADJUSTED

66 CES340 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS NONDURABLE GOODS INDEX BASE 2002:100; SEASONALLY ADJUSTED

67 CEU001 4 EMPLOYEES ON NONFARM PAYROLLS - TOTAL NONFARM THOUSANDS; NOT SEASONALLY ADJUSTED

68 CEU002 4 EMPLOYEES ON NONFARM PAYROLLS - TOTAL PRIVATE THOUSANDS; NOT SEASONALLY ADJUSTED

69 CEU003 4 EMPLOYEES ON NONFARM PAYROLLS - GOODS-PRODUCING THOUSANDS; NOT SEASONALLY ADJUSTED

70 CEU004 4 EMPLOYEES ON NONFARM PAYROLLS - NATURAL RESOURCES AND MINING THOUSANDS; NOT SEASONALLY ADJD

71 CEU005 4 EMPLOYEES ON NONFARM PAYROLLS - LOGGING THOUSANDS; NOT SEASONALLY ADJUSTED

72 CEU006 4 EMPLOYEES ON NONFARM PAYROLLS - MINING THOUSANDS; NOT SEASONALLY ADJUSTED

73 CEU011 4 EMPLOYEES ON NONFARM PAYROLLS - CONSTRUCTION THOUSANDS; NOT SEASONALLY ADJUSTED

74 CEU015 4 EMPLOYEES ON NONFARM PAYROLLS - MANUFACTURING THOUSANDS; NOT SEASONALLY ADJUSTED

75 CEU016 4 EMPLOYEES ON NONFARM PAYROLLS - MANUFACTURING PRODUCTION WORKERS THOUSANDS; NOT SEASONALLY ADJUSTED

76 CEU017 4 EMPLOYEES ON NONFARM PAYROLLS - DURABLE GOODS THOUSANDS; NOT SEASONALLY ADJUSTED

77 CEU018 4 EMPLOYEES ON NONFARM PAYROLLS - DURABLE GOODS PRODUCTION WORKERS THOUSANDS; NOT SEASONALLY ADJUSTED

78 CEU020 4 EMPLOYEES ON NONFARM PAYROLLS - NONMETALLIC MINERAL PRODUCTS THOUSANDS; NOT SEASONALLY ADJD

79 CEU033 4 EMPLOYEES ON NONFARM PAYROLLS - NONDURABLE GOODS THOUSANDS; NOT SEASONALLY ADJUSTED

80 CEU034 4 EMPLOYEES ON NONFARM PAYROLLS - NON DURABLE GOODS PRODUCTION WORKERS THOUSANDS; NOT SEASONALLY ADJUSTED

81 CEU046 4 EMPLOYEES ON NONFARM PAYROLLS - SERVICE-PROVIDING THOUSANDS; NOT SEASONALLY ADJUSTED

82 CEU047 4 EMPLOYEES ON NONFARM PAYROLLS - PRIVATE SERVICE-PROVIDING THOUSANDS; NOT SEASONALLY ADJUSTED

83 CEU048 4 EMPLOYEES ON NONFARM PAYROLLS - TRADE, TRANSPORTATION, AND UTILITIES THOUSANDS; NOT SEASONALLY ADJUSTED

84 CEU049 4 EMPLOYEES ON NONFARM PAYROLLS - WHOLESALE TRADE THOUSANDS; NOT SEASONALLY ADJUSTED

85 CEU053 4 EMPLOYEES ON NONFARM PAYROLLS - RETAIL TRADE THOUSANDS; NOT SEASONALLY ADJUSTED

86 CEU070 4 EMPLOYEES ON NONFARM PAYROLLS - RAIL TRANSPORTATION THOUSANDS; NOT SEASONALLY ADJUSTED

87 CEU080 4 EMPLOYEES ON NONFARM PAYROLLS - INFORMATION THOUSANDS; NOT SEASONALLY ADJUSTED

88 CEU088 4 EMPLOYEES ON NONFARM PAYROLLS - FINANCIAL ACTIVITIES THOUSANDS; NOT SEASONALLY ADJUSTED

89 CEU101 4 EMPLOYEES ON NONFARM PAYROLLS - PROFESSIONAL AND BUSINESS SERVICES THOUSANDS; NOT SEASONALLY ADJUSTED

90 CEU116 4 EMPLOYEES ON NONFARM PAYROLLS - EDUCATION AND HEALTH SERVICES THOUSANDS; NOT SEASONALLY ADJD

91 CEU128 4 EMPLOYEES ON NONFARM PAYROLLS - LEISURE AND HOSPITALITY THOUSANDS; NOT SEASONALLY ADJUSTED

92 CEU136 4 EMPLOYEES ON NONFARM PAYROLLS - OTHER SERVICES THOUSANDS; NOT SEASONALLY ADJUSTED

93 CEU140 4 EMPLOYEES ON NONFARM PAYROLLS - GOVERNMENT THOUSANDS; NOT SEASONALLY ADJUSTED

94 CEU141 4 EMPLOYEES ON NONFARM PAYROLLS - FEDERAL THOUSANDS; NOT SEASONALLY ADJUSTED

95 CEU142 4 EMPLOYEES ON NONFARM PAYROLLS - FEDERAL, EXCEPT POSTAL SERVICE THOUSANDS; NOT SEASONALLY ADJD

96 CEU143 4 EMPLOYEES ON NONFARM PAYROLLS - U.S. POSTAL SERVICE THOUSANDS; NOT SEASONALLY ADJUSTED

97 CEU144 4 EMPLOYEES ON NONFARM PAYROLLS - STATE GOVERNMENT THOUSANDS; NOT SEASONALLY ADJUSTED

98 CEU145 4 EMPLOYEES ON NONFARM PAYROLLS - STATE GOVERNMENT EDUCATION THOUSANDS; NOT SEASONALLY ADJD

99 CEU146 4 EMPLOYEES ON NONFARM PAYROLLS - STATE GOVERNMENT, EXCEPT EDUCATION THOUSANDS; NOT SEASONALLY ADJUSTED

100 CEU147 4 EMPLOYEES ON NONFARM PAYROLLS - LOCAL GOVERNMENT THOUSANDS; NOT SEASONALLY ADJUSTED

101 CEU148 4 EMPLOYEES ON NONFARM PAYROLLS - LOCAL GOVERNMENT EDUCATION THOUSANDS; NOT SEASONALLY ADJD

102 CEU149 4 EMPLOYEES ON NONFARM PAYROLLS - LOCAL GOVERNMENT, EXCEPT EDUCATION THOUSANDS; NOT SEASONALLY ADJUSTED

103 CEU151 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – GOODS-PRODUCING HOURS; NOT SEASONALLY ADJUSTED

104 CEU152 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NATURAL RESOURCES AND MINING HOURS; NOT SEASONALLY ADJUSTED

105 CEU153 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – CONSTRUCTION HOURS; NOT SEASONALLY ADJUSTED

106 CEU154 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING HOURS; NOT SEASONALLY ADJUSTED

107 CEU155 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING OVERTIME HOURS HOURS; NOT SEASONALLY ADJUSTED

108 CEU156 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS HOURS; NOT SEASONALLY ADJUSTED

109 CEU157 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS OVERTIME HOURS HOURS; NOT SEASONALLY ADJUSTED

110 CEU159 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONMETALLIC MINERAL PRODUCTS HOURS; NOT SEASONALLY ADJUSTED

111 CEU168 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS HOURS; NOT SEASONALLY ADJUSTED

112 CEU169 3 AVERAGE WEEKLY HOURS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS OVERTIME HOURS HOURS; NOT SEASONALLY ADJUSTED

113 CEU194 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – GOODS-PRODUCING CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

114 CEU195 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NATURAL RESOURCES AND MINING CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

115 CEU196 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – CONSTRUCTION CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

116 CEU197 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

117 CEU198 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

118 CEU200 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONMETALLIC MINERAL PRODUCTS CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

119 CEU209 4 AVERAGE HOURLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

120 CEU234 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – GOODS-PRODUCING CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

121 CEU235 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NATURAL RESOURCES AND MINING CURRENT DOLLARS, NOT SEASONALLY ADJUSTED

122 CEU236 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – CONSTRUCTION CURRENT DOLLARS, NOT SEA-

SONALLY ADJUSTED

123 CEU237 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – MANUFACTURING CURRENT DOLLARS, NOT SEA-

SONALLY ADJUSTED

124 CEU238 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – DURABLE GOODS CURRENT DOLLARS, NOT SEA-

SONALLY ADJUSTED

125 CEU240 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONMETALLIC MINERAL PRODUCTS CURRENT

DOLLARS, NOT SEASONALLY ADJUSTED

126 CEU249 4 AVERAGE WEEKLY EARNINGS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS – NONDURABLE GOODS CURRENT DOLLARS, NOT

SEASONALLY ADJUSTED

127 CEU295 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - GOODS-PRODUCING INDEX BASE: 2002:100; NOT SEASONALLY ADJUSTED

128 CEU296 2 INDEXES OF AGGREGATE WEEKLY HOURS, 2002=100: Natural Resources and Mining, Thousands of Persons, Not Seasonally Adjd

129 CEU297 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - CONSTRUCTION INDEX BASE: 2002:100; NOT SEASONALLY ADJUSTED

130 CEU298 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - MANUFACTURING INDEX BASE: 2002:100; NOT SEASONALLY ADJUSTED

131 CEU299 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - DURABLE GOODS INDEX BASE: 2002:100; NOT SEASONALLY ADJUSTED

132 CEU301 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - NONMETALLIC MINERAL PRODUCTS INDEX BASE: 2002:100; NOT SEASONALLY ADJUSTED

133 CEU310 2 INDEXES OF AGGREGATE WEEKLY HOURS OF PRODUCTION - NONDURABLE GOODS INDEX BASE: 2002:100; NOT SEASONALLY ADJUSTED

134 CEU335 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS GOODS-PRODUCING INDEX BASE

2002:100; NOT SEASONALLY ADJUSTED

135 CEU336 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS NATURAL RESOURCES AND MINING

INDEX BASE 2002:100; NOT SEASONALLY ADJUSTED

136 CEU337 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS CONSTRUCTION INDEX BASE 2002:100;

NOT SEASONALLY ADJUSTED

137 CEU338 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS MANUFACTURING INDEX BASE

2002:100; NOT SEASONALLY ADJUSTED

138 CEU339 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS DURABLE GOODS INDEX BASE

2002:100; NOT SEASONALLY ADJUSTED

139 CEU340 2 INDEXES OF AGGREGATE WEEKLY PAYROLLS OF PRODUCTION OR NONSUPERVISORY WORKERS ON PRIVATE NONFARM PAYROLLS NONDURABLE GOODS INDEX BASE

2002:100; NOT SEASONALLY ADJUSTED

140	LHAG	4	CIVILIAN LABOR FORCE: EMPLOYED, AGRICULTURE (THOUS.,SA)
141	LHC	4	CIVILIAN LABOR FORCE: TOTAL (THOUS.,SA)
142	LHC6	4	CIVILIAN LABOR FORCE: TOTAL (THOUS.,NSA)
143	LHCF	4	CIVILIAN LABOR FORCE: WOMEN, 16 YEARS + (THOUS.,SA)
144	LHCM	4	CIVILIAN LABOR FORCE: MEN, 16 YEARS + (THOUS.,SA)
145	LHEM	4	CIVILIAN LABOR FORCE: EMPLOYED, TOTAL (THOUS.,SA)
146	LHEMF	4	CIVILIAN LABOR FORCE: EMPLOYED, WOMEN, 16 YEARS + (THOUS.,SA)
147	LHEMM	4	CIVILIAN LABOR FORCE: EMPLOYED, MEN, 16 YEARS + (THOUS.,SA)
148	LHEMPA	2	RATIO, CIV.EMPLOYMNT/TOTAL NONINST.POPUL.,INC.ARMED FORCES(SA)
149	LHFC	4	CIVILIAN LABOR FORCE: WOMEN, 20 YEARS + (THOUS.,SA)
150	LHFEM	4	CIVILIAN LABOR FORCE: EMPLOYED, WOMEN, 20 YRS.+ (THOUS.,SA)
151	LHFP16	2	CIV LABOR FORCE PARTICIPATION RATE: WOMEN, 16 YRS + (%,SA)
152	LHFP20	2	LABOR FORCE PARTICIPATION RATE: WOMEN, 20 YRS.+ (%,SA)
153	LHFU	4	CIVILIAN LABOR FORCE: UNEMPLOYED, WOMEN, 20 YRS.+ (THOUS.,SA)
154	LHFUR	2	UNEMPLOYMENT RATE: WOMEN, 20 YEARS & OVER (%,SA)
155	LHMC	4	CIVILIAN LABOR FORCE: MEN, 20 YEARS + (THOUS.,SA)
156	LHME25	4	EMPLOYED PERSONS: MALES, 25 TO 54 YEARS (THOUS.,SA)
157	LHME55	4	EMPLOYED PERSONS: MALES, 55 YEARS & OVER (THOUS.,SA)
158	LHMEM	4	CIVILIAN LABOR FORCE: EMPLOYED, MEN 20 YRS.+ (THOUS.,SA)
159	LHMP16	3	CIV LABOR FORCE PARTICIPATION RATE: MEN, 16 YRS + (%,SA)
160	LHMU	4	CIVILIAN LABOR FORCE: UNEMPLOYED, MEN, 20 YRS.+ (THOUS.,SA)
161	LHMU25	2	UNEMPLOYMENT RATE: MEN, 25 TO 54 YEARS (%,SA)
162	LHMUR	2	UNEMPLOYMENT RATE: MEN, 20 YEARS & OVER (%,SA)
163	LHNAG	4	CIVILIAN LABOR FORCE: EMPLOYED, NONAGRIC.INDUSTRIES (THOUS.,SA)
164	LHNAGP	4	PERSONS AT WORK: PART TIME FOR ECON REASONS,NONAG IND(THOUS,SA)
165	LHNAPF	4	PERSONS AT WORK: COULD ONLY FIND PART-TIME WORK,NONAG IND(THOU,SA)

166 LHNAPS 4 PERSONS AT WORK: PART TIME ECON REAS-SLACK WK,NONAG IND(THOUS,SA)

167 LHNASE 4 SELF-EMPLOYED WORKERS IN NONAGRIC.INDUSTRIES (THOUS.,SA)

168 LHNGPN 4 PERSONS AT WORK:NONAG.IND.PART TIME FOR NONECONOMIC REASONS(THOUS.

169 LHP16 4 CIVILIAN LABOR FORCE PARTICIPATION RATE: BOTH SEXES, 16 YRS+(SA)

170 LHTC 4 CIVILIAN LABOR FORCE: BOTH SEXES, 16-19 YRS.(THOUS.,SA)

171 LHTEM 4 CIVILIAN LABOR FORCE: EMPLOYED, BOTH SEXES, 16-19 YRS. (THOUS.,SA)

172 LHTPTA 4 LABOR FORCE PARTICIPATION RATE: BOTH SEXES,16-19 YRS.(%,SA)

173 LHTU 4 CIVILIAN LABOR FORCE: UNEMPLOYED, BOTH SEXES,16-19 YRS(THOUS.,SA)

174 LHTUR 1 UNEMPLOYMENT RATE: BOTH SEXES, 16-19 YEARS (%,SA)

175 LHU14 4 UNEMPLOY.BY DURATION: PERSONS UNEMPL.5 TO 14 WKS (THOUS.,SA)

176 LHU15 4 UNEMPLOY.BY DURATION: PERSONS UNEMPL.15 WKS + (THOUS.,SA)

177 LHU26 4 UNEMPLOY.BY DURATION: PERSONS UNEMPL.15 TO 26 WKS (THOUS.,SA)

178 LHU27 4 UNEMPLOY.BY DURATION: PERSONS UNEMPL.27 WKS + (THOUS,SA)

179 LHU5 4 UNEMPLOY.BY DURATION: PERSONS UNEMPL.LESS THAN 5 WKS (THOUS.,SA)

180 LHU680 4 UNEMPLOY.BY DURATION: AVERAGE(MEAN)DURATION IN WEEKS (SA)

181 LHUE 4 PERSONS AT WORK: PART TIME FOR ECON REASONS, ALL IND (THOUS,SA)

182 LHUEF 4 PERSONS AT WORK: COULD ONLY FIND PART-TIME WORK,ALL IND(THOUS,SA)

183 LHUEM 4 CIVILIAN LABOR FORCE: UNEMPLOYED, TOTAL (THOUS.,SA)

184 LHUEMF 4 CIVILIAN LABOR FORCE: UNEMPLOYED, WOMEN, 16 YEARS + (THOUS.,SA)

185 LHUEMM 4 CIVILIAN LABOR FORCE: UNEMPLOYED, MEN, 16 YEARS + (THOUS.,SA)

186 LHUEN 4 PERSONS AT WORK:ALL.IND.PART TIME FOR NONECONOMIC REASONS(THOUS.SA)

187 LHUES 4 PERSONS AT WORK: PART TIME ECON REASONS-SLACK WK,ALL IND(THOU,SA)

188 LHUFR 2 UNEMPLOYMENT RATE: WOMEN, 16 YEARS AND OVER (%,SA)

189 LHUMR 2 UNEMPLOYMENT RATE: MEN, 16 YEARS AND OVER (%,SA)

190 LHUR 2 UNEMPLOYMENT RATE: ALL WORKERS, 16 YEARS & OVER (%,SA)

191 LHURM 2 UNEMPLOYMENT RATE: MARRIED MEN, SPOUSE PRESENT (%,SA)

192 LHURMF 2 UNEMPLOYMENT RATE: MARRIED WOMEN, SPOUSE PRESENT (%,SA)

193 LHWC 4 CIVILIAN LABOR FORCE: WHITE (THOUS.,SA)

194 LHWEM 4 CIVILIAN LABOR FORCE: EMPLOYED, WHITE (THOUS.,SA)

195 LHWU 4 CIVILIAN LABOR FORCE: UNEMPLOYED, WHITE (THOUS.,SA)

196 LHWUR 2 UNEMPLOYMENT RATE: WHITE WORKERS (%,SA)

197 LUINC 4 AVG WKLY INITIAL CLAIMS,STATE UNEMPLOY.INS.,EXC P.RICO(THOUS;SA)

198 LURSP 2 INSURED UNEMPLOYMENT AS % COVERED EMPLOY.,EXC P.RICO(%,SA)

199 LZHUEM 4 UNEMPLOYED: TOTAL, 16 YRS AND OVER (NO.IN THOUS,NSA)

200 LZHUR 2 UNEMPLOYMENT RATE: TOTAL, 16 YRS AND OVER (%,NSA)

201 P16 4 POPULATION: TOTAL CIVILIAN NONINSTITUTIONAL (THOUS.,NSA)

202 PF16 4 CIVILIAN NONINST POPULATION: WOMEN, 16 YEARS + (THOUS.,NSA)

203 PF20 4 CIVILIAN NONINSTITUTIONAL POPULATION:FEMALES 20 YRS.& OVER

204 PI001 4 Personal Income, Billions of Dollars , SAAR Billions of Dollars , SAAR

205 PI002 4 Compensation of employees, received, Billions of Dollars , SAAR Billions of Dollars , SAAR

206 PI003 4 Wage and Salary Disbursements, Billions of Dollars , SAAR Billions of Dollars , SAAR

207 PI004 4 Wage and Salary Disbursements - Private Industries, Billions of Dollars , SAAR Billions of Dollars , SAAR

208 PI010 4 Wage and Salary Disbursements - Government, Billions of Dollars , SAAR Billions of Dollars , SAAR

209 PI011 4 Supplements to Wages and Salaries, Billions of Dollars , SAAR Billions of Dollars , SAAR

210 PI014 2 Compensation of employees, received- Adjustments, Billions of Dollars , SAAR Billions of Dollars , SAAR

211 PI015 2 Compensation of employees, received- Adjustments- Farm, Billions of Dollars , SAAR Billions of Dollars , SAAR

212 PI016 2 Compensation of employees, received- Adjustments- Nonfarm, Billions of Dollars , SAAR Billions of Dollars , SAAR

213 PI017 2 Compensation of employees, received- Adjustments- Capital Consumption Adjustments, Billions of Dollars , SAAR Billions of Dollars , SAAR

214 PI018 4 Personal Income Receipts on Assets, Billions of Dollars , SAAR Billions of Dollars , SAAR

215 PI019 4 Personal Income Receipts on Assets- Personal Interest Income, Billions of Dollars , SAAR Billions of Dollars , SAAR

216 PI020 4 Personal Income Receipts on Assets- Personal Dividend Income, Billions of Dollars , SAAR Billions of Dollars , SAAR

217 PI021 4 Personal Current Transfer Receipts, Billions of Dollars , SAAR Billions of Dollars , SAAR

218 PI022 4 Personal Current Transfer Receipts- Government Social Benefits to Persons, Billions of Dollars , SAAR Billions of Dollars , SAAR

219 PI026 4 Personal Current Transfer Receipts- Government Social Benefits to Persons- Business (net), Billions of Dollars , SAAR Billions of Dollars , SAAR

220 PI029 4 Disposable Personal Income, Billions of Dollars , SAAR Billions of Dollars , SAAR

221 PM16 4 CIVILIAN NONINST POPULATION: MEN, 16 YEARS + (THOUS.,NSA)

222 PM20 4 CIVILIAN NONINSTITUTIONAL POPULATION:MALES 20 YRS.& OVER

223 PMEMP 1 NAPM EMPLOYMENT INDEX (PERCENT)

224 LHEL 2 INDEX OF HELP-WANTED ADVERTISING IN NEWSPAPERS (1967=100;SA)

225 PT16@19 5 CIVILIAN NONINST POPULATION: BOTH SEXES, 16-19 YRS (THOUS,NSA)

Prices Variables and transformation:

Code Trans Long Name

1 PCSCS 2 CHANGE IN CPI FOR SERVICES,SMOOTHED(BCD-120)

2 PMCP 1 NAPM COMMODITY PRICES INDEX (PERCENT)

3 PR17 5 CPI-W: NONALCOHOLIC BEVERAGES (82-84=100,SA)

4 PR25 5 CPI-W: FUEL OIL, COAL AND BOTTLED GAS (82-84=100,SA)

5 PR26 5 CPI-W: GAS (PIPED) & ELECTRICITY (82-84=100,SA)

6 PR303 5 CPI-W: FRUITS & VEGETABLES (82-84=100,SA)

7 PR40 5 CPI-W: FOOTWEAR (82-84=100,SA)

8 PR46 5 CPI-W: USED CARS (82-84=100,SA)

9 PR803 5 CPI-W: ENERGY (82-84=100,SA)

10 PR811 5 CPI-W: FOOD (82-84=100,SA)

11 PR812 5 CPI-W: FOOD AT HOME (82-84=100,SA)

12 PR821 5 CPI-W: FUEL & OTHER UTILITIES (82-84=100,SA)

13 PR83 5 CPI-W: APPAREL & UPKEEP (82-84=100,SA)

14 PR833 5 CPI-W: MEN'S & BOYS' APPAREL (82-84=100,SA)

15 PR834 5 CPI-W: WOMEN'S AND GIRLS' APPAREL (82-84=100,SA)

16 PR84 5 CPI-W: TRANSPORTATION (82-84=100,SA)

17 PR841 5 CPI-W: PRIVATE TRANSPORTATION (82-84=100,SA)

18 PR85 5 CPI-W: MEDICAL CARE (82-84=100,SA)

19 PR852 5 CPI-W: MEDICAL CARE SERVICES (82-84=100,SA)

20 PR883 5 CPI-W: ENERGY COMMODITIES (82-84=100,SA)

21 PRC 5 CPI-W: COMMODITIES (82-84=100,SA)

22 PRCD 5 CPI-W: DURABLES (82-84=100,SA)

23 PRCX 5 CPI-W: COMMODITIIES LESS FOOD (82-84=100,SA)

24 PRCXX 5 CPI-W: COMMODITIES LESS FOOD & ENERGY (82-84=100,SA)

25 PRHS 5 CPI-W: SHELTER (82-84=100,SA)

26 PRNEW 5 CPI-W: ALL ITEMS (82-84=100,SA)

27 PRNV 5 CPI-W: NEW VEHICLES (82-84=100,SA)

28 PRS 5 CPI-W: SERVICES (82-84=100,SA)

29 PRXE 5 CPI-W: ALL ITEMS LESS ENERGY (82-84=100,SA)

30 PRXF 5 CPI-W: ALL ITEMS LESS FOOD (82-84=100,SA)

31 PRXHS 5 CPI-W: ALL ITEMS LESS SHELTER (82-84=100,SA)

32 PRXM 5 CPI-W: ALL ITEMS LESS MEDICAL CARE (82-84=100,SA)

33 PRXX 5 CPI-W: ALL ITEMS LESS FOOD & ENERGY (82-84=100,SA)

34 PU17 5 CPI-U: NONALCOHOLIC BEVERAGES (82-84=100,SA)

35 PU25 5 CPI-U:FUEL OIL, COAL AND BOTTLED GAS (82-84=100,SA)

36 PU26 5 CPI-U: GAS (PIPED) & ELECTRICITY (82-84=100,SA)

37 PU303 5 CPI-U: FRUITS & VEGATABLES (82-84=100,SA)

38 PU40 5 CPI-U: FOOTWEAR (82-84=100,SA)

39 PU45 5 CPI-U: NEW CARS (82-84=100,SA)

40 PU46 5 CPI-U: USED CARS (82-84=100,SA)

41 PU803 5 CPI-U:ENERGY (82-84=100,SA)

42 PU811 5 CPI-U: FOOD (82-84=100,SA)

43 PU812 5 CPI-U: FOOD AT HOME (82-84=100,SA)

44 PU821 5 CPI-U: FUEL & OTHER UTILITIES (82-84=100,SA)

45 PU83 5 CPI-U: APPAREL & UPKEEP (82-84=100,SA)

46 PU833 5 CPI-U: MEN'S & BOY'S APPAREL (82-84=100,SA)

47 PU834 5 CPI-U: WOMEN'S AND GIRL'S APPAREL (82-84=100,SA)

48 PU84 5 CPI-U: TRANSPORTATION (82-84=100,SA)

49 PU841 5 CPI-U: PRIVATE TRANSPORTATION (82-84=100,SA)

50 PU85 5 CPI-U: MEDICAL CARE (82-84=100,SA)

51 PU852 5 CPI-U: MEDICAL CARE SERVICES (82-84=100,SA)

52 PU882 5 CPI-U: NONDURABLES (1982-84=100,SA)

53 PU883 5 CPI-U: ENERGY COMMODITIES (82-84=100,SA)

54 PUC 5 CPI-U: COMMODITIES (82-84=100,SA)

55 PUCD 5 CPI-U: DURABLES (82-84=100,SA)

56 PUCX 5 CPI-U: COMMODITIES LESS FOOD (82-84=100,SA)

57 PUCXX 5 CPI-U:COMMODITIES LESS FOOD AND ENERGY (82-84=100,SA)

58 PUHS 5 CPI-U: SHELTER (82-84=100,SA)

59 PUNEW 5 CPI-U: ALL ITEMS (82-84=100,SA)

60 PUNV 5 CPI-U: NEW VEHICLES (82-84=100,SA) INDEX BASE: 1982-84 = 1.000

61 PUS 5 CPI-U: SERVICES (82-84=100,SA)

62 PUXE 5 CPI-U: ALL ITEMS LESS ENERGY (82-84=100,SA)

63 PUXF 5 CPI-U: ALL ITEMS LESS FOOD (82-84=100,SA)

64 PUXHS 5 CPI-U: ALL ITEMS LESS SHELTER (82-84=100,SA)

65 PUXM 5 CPI-U: ALL ITEMS LESS MIDICAL CARE (82-84=100,SA)

66 PUXX 5 CPI-U: ALL ITEMS LESS FOOD AND ENERGY (82-84=100,SA)

67 PZR15 5 CPI-W: SUGAR & SWEETS (82-84=100,NSA)

68 PZR17 5 CPI-W: NONALCOHOLIC BEVERAGES (82-84=100,NSA)

69 PZR19 5 CPI-W: FOOD AWAY FROM HOME (82-84=100,NSA)

70 PZR201 5 CPI-W: NONDURABLES LESS FOOD (82-84=100,NSA)

71 PZR202 5 CPI-W: NONDURABLES LESS FOOD & APPAREL (82-84=100,NSA)

72 PZR211 5 CPI-W: RENT, RESIDENTIAL (82-84=100,NSA)

73 PZR25 5 CPI-W: FUEL, OIL, COAL & BOTTLED GAS (82-84=100,NSA)

74 PZR26 5 CPI-W: GAS (PIPED) & ELECTRICITY (82-84=100,NSA)

75 PZR300 5 CPI-W: CEREALS & BAKERY PRODUCTS (82-84=100,NSA)

76 PZR302 5 CPI-W: DAIRY PRODUCTS (82-84=100,NSA)

77 PZR303 5 CPI-W: FRUITS & VEGETABLES (82-84=100,NSA)

78 PZR40 5 CPI-W: FOOTWEAR (82-84=100,NSA)

79 PZR401 5 CPI-W: TRANSPORTATION SERVICES (82-84=100,NSA)

80 PZR65 5 CPI-W: PERSONAL CARE SERVICES (82-84=100,NSA)

81 PZR803 5 CPI-W: ENERGY (82-84=100,NSA)

82 PZR811 5 CPI-W: FOOD (82-84=100,NSA)

83 PZR812 5 CPI-W: FOOD AT HOME (82-84=100,NSA)

84 PZR821 5 CPI-W: FUEL & OTHER UTILITIES (82-84=100,NSA)

85 PZR83 5 CPI-W: APPAREL & UPKEEP (82-84=100,NSA)

86 PZR833 5 CPI-W: MEN'S & BOYS' APPAREL (82-84=100,NSA)

87 PZR834 5 CPI-W: WOMEN'S AND GIRLS' APPAREL (82-84=100,NSA)

88 PZR84 5 CPI-W: TRANSPORTATION (82-84=100,NSA)

89 PZR841 5 CPI-W: PRIVATE TRANSPORTATION (82-84=100,NSA)

90 PZR85 5 CPI-W:MEDICAL CARE (82-84=100,NSA)

91 PZR852 5 CPI-W: MEDICAL CARE SERVICES (82-84=100,NSA)

92 PZR871 5 CPI-W: PERSONAL CARE (82-84=100,NSA)

93 PZR882 5 CPI-W: NONDURABLES (82-84=100,NSA)

94 PZR883 5 CPI-W: ENERGY COMMODITIES (82-84=100,NSA)

95 PZRC 5 CPI-W: COMMODITIES (82-84=100,NSA)

96 PZRCD 5 CPI-W: DURABLES (82-84=100,NSA)

97 PZRCX 5 CPI-W: COMMODITIES LESS FOOD (82-84=100,NSA)

98 PZRCXX 5 CPI-W: COMMODITIES LESS FOOD & ENERGY (82-84=100,NSA)

99 PZRHS 5 CPI-W: SHELTER (82-84=100,NSA)

100 PZRNEW 5 CPI-W: ALL ITEMS (82-84=100,NSA)

101 PZRNV 5 CPI-W: NEW VEHICLES (82-84=100,NSA)

102 PZRP67 5 PURCH POWER CONSUMER $,URBAN WAGE EARNERS,CLER WKRS(67=$1,NSA)

103 PZRP82 5 CPI-W:PURCHAS.POWER OF CONSUMER $(82-84=$1,NSA)

104 PZRS 5 CPI-W: SERVICES (82-84=100,NSA)

105 PZRSX 5 CPI-W: SERVICE LESS ENERGY (82-84=100,NSA)

106 PZRXE 5 CPI-W: ALL ITEMS LESS ENERGY (82-84=100,NSA)

107 PZRXF 5 CPI-W: ALL ITEMS LESS FOOD (82-84=100,NSA)

108 PZRXHS 5 CPI-W: ALL ITEMS LESS SHELTER (82-84=100,NSA)

109 PZRXM 5 CPI-W: ALL ITEMS LESS MEDICAL CARE (82-84=100,NSA)

110 PZRXX 5 CPI-W: ALL ITEMS LESS FOOD & ENERGY (82-84=100,NSA)

111 PZU15 5 CPI-U: SUGAR & SWEETS (82-84=100,NSA)

112 PZU17 5 CPI-U: NONALCOHOLIC BEVERAGES (82-84=100,NSA)

113 PZU19 5 CPI-U: FOOD AWAY FROM HOME (82-84=100,NSA)

114 PZU201 5 CPI-U: NONDURABLES LESS FOOD (82-84=100,NSA)

115 PZU202 5 CPI-U:NONDURABLES LESS FOOD & APPAREL(82-84=100,NSA)

116 PZU211 5 CPI-U: RENT, RESIDENTIAL (82-84=100,NSA)

117 PZU25 5 CPI-U: FUEL, OIL, COAL & BOTTLED GAS(82-84=100,NSA)

118 PZU26 5 CPI-U: GAS (PIPED) & ELECTRICITY (82-84=100,NSA)

119 PZU300 5 CPI-U: CEREALS & BAKERY PRODUCTS (82-84=100,NSA)

120 PZU302 5 CPI-U: DAIRY PRODUCTS (82-84=100,NSA)

121 PZU303 5 CPI-U: FRUITS & VEGETABLES (82-84=100,NSA)

122 PZU40 5 CPI-U: FOOTWEAR (82-84=100,NSA)

123 PZU401 5 CPI-U: TRANSPORTATION SERVICES(82-84=100,NSA)

124 PZU45 5 CPI-U: NEW CARS (82-84=100,NSA)

125 PZU803 5 CPI-U: ENERGY (82-84=100,NSA)

126 PZU811 5 CPI-U: FOOD (82-84=100,NSA)

127 PZU812 5 CPI-U: FOOD AT HOME (82-84=100,NSA)

128 PZU815 5 CPI-U: MEATS (82-84=100,NSA)

129 PZU821 5 CPI-U: FUEL & OTHER UTILITIES (82-84=100,NSA)

130 PZU83 5 CPI-U: APPAREL & UPKEEP (82-84=100,NSA)

131 PZU833 5 CPI-U: MEN'S & BOYS' APPAREL (82-84=100,NSA)

132 PZU834 5 CPI-U: WOMEN'S AND GIRLS' APPAREL (82-84=100,NSA)

133 PZU84 5 CPI-U: TRANSPORTATION (82-84=100,NSA)

134 PZU841 5 CPI-U: PRIVATE TRANSPORTATION (82-84=100,NSA)

135 PZU85 5 CPI-U: MEDICAL CARE (82-84=100,NSA)

136 PZU852 5 CPI-U: MEDICAL CARE SERVICES (82-84=100,NSA)

137 PZU871 5 CPI-U: PERSONAL CARE (82-84=100,NSA)

138 PZU882 5 CPI-U: NONDURABLES (82-84=100,NSA)

139 PZU883 5 CPI-U: ENERGY COMMODITIES (82-84=100,NSA)

140 PZUC 5 CPI-U: COMMODITIES (82-84=100,NSA)

141 PZUCD 5 CPI-U: DURABLES (82-84=100,NSA)

142 PZUCX 5 CPI-U: COMMODITIES LESS FOOD (82-84=100,NSA)

143 PZUCXX 5 CPI-U: COMMODITIES LESS FOOD & ENERGY (82-84=100,NSA)

144 PZUHS 5 CPI-U: SHELTER (82-84=100,NSA)

145 PZUNEW 5 CPI-U: ALL ITEMS (82-84=100,NSA)

146 PZUNV 5 CPI-U:NEW VEHICLES (82-84=100,NSA)

147 PZUP67 5 CPI-U:PURCHASING POWER OF THE CONSUMER DOLLAR(1967=$1.00,NSA)

148 PZUP82 5 CPI-U:PURCHAS. POWER OF CONSUMER $ 1982-84=100(82-84=100,NSA)

149 PZUS 5 CPI-U: SERVICES (82-84=100,NSA)

150 PZUSX 5 CPI-U: SERVICES LESS ENERGY (82-84=100,NSA)

151 PZUXE 5 CPI-U: ALL ITEMS LESS ENERGY (82-84=100,NSA)

152 PZUXF 5 CPI-U: ALL ITEMS LESS FOOD (82-84=100,NSA)

153 PZUXHS 5 CPI-U: ALL ITEMS LESS SHELTER (82-84=100,NSA)

154 PZUXM 5 CPI-U: ALL ITEMS LESS MEDICAL CARE (82-84=100,NSA)